




L I B R A R Y

B O S T O N
U N I V E R S I T Y



 COLLEGE 
BUSINESS
ADMINISTRATION

Class No.	* 629.13
Book No.	C 88
Acc. No.	23567
Date	6-19-35



Digitized by the Internet Archive
in 2014

<https://archive.org/details/economictrendsin00crow>

Boston University
College of Business Administration

Thesis

Economic Trends
in
International Air Transportation
from the
United States

by

Francis Leo Crowley
(B.B.A. Boston University 1926)

submitted in partial fulfillment of
the requirements for the degree of

Master of Business Administration
1935



Boston University
College of Business Administration

Thesis

Economic Trends

in

International Air Transportation

from the

United States

by

Francis Leo Crowley

(B.S.A. Boston University 1938)

submitted in partial fulfillment of
the requirements for the degree of

Master of Business Administration
1938



6/19/35
23567
* 629.13
C88
cop. 1

Table of Contents

	Page
Introduction	I
Chapter I	
The Rise of Aviation	1
The First Flight	1
Effect of World War on Aviation	9
Recognition of Air Transportation	14
Public Confidence Established in 1927	17
Chapter II	
The Growth of International Aviation for Period 1926 to 1934	20
Government Aid in Regulating Air Operation	20
Growth of Private Companies	30
Public Becomes Airminded	33
Improvements in Aircraft	33
Chapter III	
Government Aid to Commercial Aviation	37
The Federal Airways System	37
President Roosevelt's Aviation Message to Congress	49
Chapter IV	
Types of International Service	53
Air Mail	57
Foreign Air Mail Postage Rates	59
Air Express	62
Foreign Air Express Rates	67
Air Passenger Service	68
Factors Governing International Air Route Development	72

Table of Contents

1	Introduction
Chapter I	
1	The Rise of Aviation
1	The Great War
9	Effect of World War on Aviation
14	Development of Air Transportation
17	Public Confidence Established in 1919
Chapter II	
20	The Growth of International Aviation for Period 1923 to 1934
26	Government Aid in Regulating Air Operation
30	Growth of Private Companies
33	Public Service Airplanes
35	Improvements in Aircraft
Chapter III	
37	Government Aid to Commercial Aviation
37	The Federal Airways System
42	President Roosevelt's Aviation Message to Congress
Chapter IV	
52	Types of International Service
57	Air Mail
59	Foreign Air Mail Postage Rates
62	Air Express
67	Foreign Air Express Rates
69	Air Cargo Service
72	Foreign Government International Air Route Development

Chapter V

	Page
International Scope of Aviation	77
Regulations of the United States Department of Commerce Governing Entry and Clearance of Aircraft	77
United States Airports of Entry	81
Operations of International Lines from the United States	86
Attempts and Proposals of Leading Nations of the World to Establish Trans-Oceanic Air Transport	93

Chapter VI

Summary of Economic Trends of International Air Transportation	101
Appendices	104
Bibliography	113

Appendices

A. Consolidated Statement of Scheduled Foreign Air Transport Operations Statistics for Calendar Year 1931.	104
B. Consolidated Statement of Scheduled Foreign Air Transport Operations Statistics for Calendar Year 1932.	105
C. Consolidated Statement of Scheduled Foreign Air Transport Operations Statistics for Calendar Year 1933.	106
D. Scheduled Foreign Air Transport Operations Statistics for the Period January-June, 1934.	107
E. Progress of Civil Aeronautics in the United States. - Scheduled Foreign Air Transport Operations for the Period 1926-1929.	108
F. Progress of Civil Aeronautics in the United States. - Scheduled Foreign Air Transport Operations for the Period 1930-1933.	109
G. United States Foreign Air Transport Routes.	110

Activities of the United States Department of Commerce Governing Entry and Clearance of Aircraft

United States Airports of Entry

Operations of International Lines from the United States

Agreements and Proposals of Member Nations of the World to establish Trans-Atlantic Air Transport

Chapter VI

Summary of Economic Trends of International Air Transportation

Appendices

Bibliography

Appendices

A. Consolidated Statement of Scheduled Foreign Air Transport Operations Statistics for Calendar Year 1941.

B. Consolidated Statement of Scheduled Foreign Air Transport Operations Statistics for Calendar Year 1932.

C. Consolidated Statement of Scheduled Foreign Air Transport Operations Statistics for Calendar Year 1933.

D. Scheduled Foreign Air Transport Operations Statistics for the Period January-June, 1934.

E. Progress of Civil Aeronautics in the United States - Scheduled Foreign Air Transport Operations for the Period 1928-1932.

F. Progress of Civil Aeronautics in the United States - Scheduled Foreign Air Transport Operations for the Period 1930-1933.

G. United States Foreign Air Transport Routes.

I

Introduction

The purpose of this thesis is to show:

1. The growth of international air transportation (from the United States) for the period 1926 to 1934.
2. The facts which substantiate this growth.
3. The need of a further growth.

International air transportation from the United States in so far as our present progress in aviation is concerned, is limited to the nations of the Western Hemisphere.

It is important that the people of the United States use every means at their disposal to expand their interests in the markets of the world. Air transportation of mail, of passengers, and of merchandise, is an established industry. It is our problem, therefore, to exhaust every effort to develop this newest means of transportation.

There have been many texts written on the subject of air transportation. As between nations, the following books present work on this subject:

- "The World, The Air, and the Future" by Dennis Burney.
- "Aviation's Place in Tomorrow's Business" by Earl Reeves.
- "Transport Aviation" by Archibald Black.
- "International Airports" by Stedman S. Hanks.

In my research, I have obtained through direct personal correspondence, valuable data from:

1. The United States Department of Commerce, Bureau of Air Commerce.
2. The Government of Canada.

Introduction

The purpose of this thesis is to show:

1. The growth of international air transportation from 1925 to 1955.
2. The factors which substantiate this growth.
3. The need of a further growth.

International air transportation from 1925 to 1955

There is an air transport process in action in the world, it is limited to the nations of the Western Hemisphere. It is important that the people of the United States use every means at their disposal to expand their interests in the markets of the world. Air transportation of mail, of passengers, and of cargo, is an established industry. It is our hope, therefore, to extend every effort to develop this new era of transportation.

There have been many texts written on this subject.

In air transportation, the following are the following:

Books present work on this subject:

- "The World, the Air, and the Future" by Gerald Stewart
- "Aviation's Place in Tomorrow's World" by Paul Brown
- "Transportation" by Frederick B. Smith
- "International Airway" by Robert A. Smith

In my research, I have obtained the following:

Personal contacts and interviews with the following:

1. The United States Department of Commerce, Bureau of Civil Aeronautics.
2. The Government of Canada.

II

3. The Pan-American Air Lines.
4. The Boston Chamber of Commerce.
5. Chamber of Commerce of the United States.
6. The Curtis Publishing Company.
7. The United States Post Office Department.
8. Many helpful references from major operating companies throughout the United States.

5. The International Air Lines.
6. The Boston Chamber of Commerce.
7. Chamber of Commerce of the United States.
8. The Curtis Publishing Company.
9. The United States Post Office Department.
10. Navy Department references from the Department of the Interior.

CHAPTER I

The Rise of Aviation

The First Flight

At the outset, it might be well to distinguish between the different kinds of flight. Also, certain definitions of terms used in the aviation industry will serve to make clear our narration of the first flight. As defined by the Nomenclature for Aeronautics, published by the National Advisory Committee for Aeronautics, the word "aeronautics" means the science and art of flight. "Aviation" is the art of operating heavier-than-air craft. The word "aerostation" is defined as the art of operating aerostats, or lighter-than-air craft, including airships and balloons. Airplanes are heavier-than-air, mechanically driven, fixed-wing aircraft, as opposed to airships, which are lighter-than-air craft.⁽¹⁾

We are concerned here with the first successful flight of an airplane flown under its own power, and carrying a man. This event occurred on December 17, 1903, when Orville and Wilbur Wright demonstrated to the world that dynamic flight was possible. With Orville at the controls of the airplane and Wilbur stationed on the ground, the plane left the starting rail on the sands at Kitty Hawk, North Carolina, and remained in the air for twelve seconds.⁽²⁾ The plane made three other flights that day, increasing the distance each time and landing safely after each flight. In the last flight a distance of eight hundred fifty-two feet was covered, and the plane remained aloft fifty-nine seconds.

(1) United States Department of Commerce-Bureau of Air Commerce-Aeronautics Bulletin #1 Page 2.

(2) Aviation of Today-J.L. Nayler and E. Ower, Page 100.

The First Light

The First Light

At the outset, it might be well to state that the
various different kinds of light, also, called, variations
of terms used in the aviation industry will serve to make clear
the function of the first light, as defined by the committee.
The first light, published by the National Academy of
Sciences for aeronautics, the word "aeronautics" means the
science and art of flying. "Aviation" is the art of operating
aeroplanes. The word "aeronautics" is defined as
the art of operating aeroplanes, or lighter-than-air craft, in-
cluding dirigibles and balloons. "Aviation" and "aeronautics"
mean essentially the same, though strictly, as opposed to "aerobics",
which are lighter-than-air craft.

The first light was with the first successful

flight of an airplane flown under its own power, and carrying
a man. This event occurred on December 17, 1903, when Orville
and Wilbur Wright demonstrated to the world that dynamic flight
was possible. With Orville at the controls of the airplane and
Wilbur standing on the ground, the plane left the starting
rail on the sand at Kitty Hawk, North Carolina, and remained
in the air for twenty seconds. The plane was three other
feet that day, but during the fifteen seconds each time and landing
safely after each flight. In the last flight a distance of
eight hundred fifty-two feet was covered, and the plane re-
mained aloft thirty-nine seconds.

(1) United States Department of Commerce-Bureau of Air
Commerce-Aeronautics Division at Kansas City.

(2) Aviation of Today-By J. E. Taylor and J. E. Taylor, Page 107.

The real significance of this first flight can be realized only by a study of the trials and experiments of man in his attempt to fly. The success of the Wright brothers in their first flight and also in subsequent flights can be attributed to two causes: first, the principles laid down by Otto Lilienthal and others in their gliding experiments, and second, to the improvements that were being made in the design of internal combustion engines. Otto Lilienthal started his experiments in flight in 1860, when, as a mere boy, he studied the flight of the stork and attempted to imitate it.⁽¹⁾ Lilienthal was assisted by his brother, Gustav. Their first experiment consisted of a wing strapped to the shoulders of the experimenter. He was then supposed to run down an incline against the wind and rise into the air. This early attempt, of course, failed, but their enthusiasm to learn to fly led them to further experiments later on in life. They discovered that by the beating of wings flight could be sustained.

Through persistent study they finally decided that this beating of the wings, or flapping flight, required too much muscular energy for man. They, therefore, discarded this theory of flight and turned to a study of gliders. Their experiments with gliders gave them data concerning forces set up by motion through the air. They solved satisfactorily the problem of fore and aft balance. Otto Lilienthal died as the result of an accident while experimenting on August 9, 1896. The last glider he constructed was designed for motive power.

(1) Aviation of Today-J.L. Nayler and E. Ower, Page 94.

The real significance of this first flight can be realized only by a study of the trials and experiments of man in his attempt to fly. The success of the Wright brothers in their first flight and also in subsequent flights can be attributed to two causes: first, the principles laid down by Otto Lilienthal and others in their gliding experiments, and second, to the improvements that were being made in the design of internal combustion engines. Otto Lilienthal started his experiments in flight in 1880, when, as a mere boy, he studied the flight of the hawk and attempted to imitate it. Lilienthal was assisted by his brother, Gustav. Their first experiment consisted of a wing strapped to the shoulders of the experimenter. He was then supposed to run down an incline against the wind and rise into the air. This early attempt, of course, failed, but their enthusiasm to learn to fly led them to further experiments later on in life. They discovered that by the beating of wings flight could be sustained. Through persistent study they finally decided that this beating of the wings, or flapping flight, required too much muscular energy for man. They, therefore, discarded this theory of flight and turned to a study of gliders. Their experiments with gliders gave them data concerning forces set up by motion through the air. They solved satisfactorily the problem of force and air balance. Otto Lilienthal died as the result of an accident while experimenting on August 9, 1896. The last glider he constructed was designed for motive power.

Other pioneers of gliders were Percy S. Pilcher in England and Octave Chanute in America. Pilcher designed a wheeled undercarriage for his glider. This undercarriage had steel springs in order to absorb the shock of landing and is considered the pioneer of the modern undercarriage. Chanute's contribution to the perfection of gliders was the discovery that balance should be maintained not by the movement of the center of gravity but by alteration of movable surfaces so as to alter the center of pressure.⁽¹⁾

The Wright brothers profited by the experiences of both Lilienthal and Chanute in the design of their glider. In some instances, they made changes in order to improve the possibility of sustained flight. For example, one difficulty, that of keeping the glider on an even keel, was solved by warping the wings, that is, pulling one wing tip up and the other down by the use of wires. The use of a rudder or elevator in order to control pitch was also added. In 1902, they had constructed their third glider complete in all details except for some sort of motive power. Here they were confronted by another difficulty, because there were no engines in existence sufficiently light for the purpose. They decided to construct their own engine, a small petrol cycle engine, which had a very low weight horse power ratio. Toward the end of 1903, having completed all plans, they announced their proposed flight, a flight witnessed by a small audience.

After their success, they dismantled the machine and returned home satisfied with their work. At the request of the Royal Aeronautical Society of Great Britain, a complete

(1) Aviation of Today-J.L. Naylor and E. Ower, Page 97.

Other pioneers of gliders were Percy S. Pilcher in England and George Chanute in America. Pilcher designed a wheeled undercarriage for his glider. This undercarriage had steel springs in order to absorb the shock of landing and he considered the pioneer of the modern undercarriage. Chanute's contribution to the perfection of gliders was the discovery that balance should be maintained not by the movement of the center of gravity but by alteration of movable surfaces so as to alter the center of pressure.

The Wright brothers profited by the experience of both Lilienthal and Chanute in the design of their glider. In some instances, they made changes in order to improve the possibility of sustained flight. For example, one difficulty that of keeping the glider on an even keel, was solved by warping the wings, that is, pulling one wing tip up and the other down by the use of wires. The use of a rudder or elevator in order to control pitch was also added. In 1902, they had constructed their third glider complete in all details except for some sort of motive power. Here they were confronted by another difficulty, because there were no engines in existence sufficiently light for the purpose. They decided to construct their own engine, a small petrol cycle engine, which had a very low weight horse power ratio. Toward the end of 1903, having completed all plans, they announced their proposed flight, a flight witnessed by a small audience. After their success, they dismantled the machine and returned home satisfied with their work. At the request of the Royal Aeronautical Society of Great Britain, a complete

reconstruction of the plane was made later. This plane is now on exhibition at the Science Museum in South Kensington, England.⁽¹⁾

In 1872, the Mongolfier brothers of France discovered that air, if heated sufficiently, could be expanded to twice its volume.⁽²⁾ Upon the converse of this, its diminished weight, they based the belief that it would, therefore, rise. They experimented first, in a small way by constructing a small box capable of holding about seventy-eight cubic inches of air. Their theory confirmed, they eagerly started the construction of a large balloon containing more than sixty-five feet of heated air which rose two hundred to three hundred feet in the air. Again they constructed a larger and stronger balloon and on June 5, 1783, invited the public to view its flight at Annonay, France. The balloon rose to a height of six thousand feet and then travelled seventy-two hundred feet in a horizontal line and descended. This achievement caused the most intense excitement in France. In the same year, in an aerostatic machine made by Montgolfier, the first aerial voyage took place. This voyage occurred at LaMurette, near Paris on October 21, 1783. The passengers were Pilatre de Roziers, a daring experimenter with balloons, and the Marquis d'Arlandes. They sailed across the city and landed safely after journeying thirty thousand feet in about twenty or twenty-five minutes. In the succeeding years many ascents were made. It can be stated that the evolution of the free balloon had, in all essentials, reached the form in which it exists today by the end of 1783.

(1) Aviation of Today-J.L. Nayler and E. Ower, Page 100.

(2) The Boston Globe-October 19, 1934.

reconstruction of the plane was made later. This plane is now on exhibition at the Science Museum in South Kensington, England.

In 1872, the Montgolfier brothers of France discovered that air, if heated sufficiently, could be expanded to twice its volume. Upon the converse of this, its diminished weight, they based the belief that it would, therefore, rise. They experimented first, in a small way by constructing a small box capable of holding about seventy-eight cubic inches of air. Their theory confirmed, they eagerly started

the construction of a large balloon containing more than sixty-five feet of heated air which rose two hundred to three hundred feet in the air. Again they constructed a larger and stronger balloon and on June 2, 1783, invited the public to view its flight at Annemey, France. The balloon rose to a height of six thousand feet and then travelled seventy-two

hundred feet in a horizontal line and descended. This achievement caused the most intense excitement in France. In the same year, in an aerostatic machine made by Montgolfier, the first aerial voyage took place. This voyage occurred at Lamotte, near Paris on October 21, 1783. The

passengers were Pilatre de Roziers, a daring experimenter with balloons, and the Marquis d'Arlandes. They sailed across the city and landed safely after journeying thirty thousand feet in about twenty or twenty-five minutes. In the succeeding years many ascents were made. It can be

stated that the evolution of the free balloon had, in all essentials, reached the form in which it exists today by

the end of 1783.

To the men who were trying to imitate the bird in its flight the balloon was not wholly satisfying. They knew that birds were heavier than the volume of air they displaced, and yet they could rise from the ground and travel at will. Some other method, not depending on air buoyancy, must therefore be possible, and the effort to find it continued.

These efforts were based on the principles that to every action there is an equal and opposite reaction. They reasoned that if there were some way to push downwards on the air, the air would push upwards to an equal amount. If this upward push was greater than the object pushing downward, the object would rise from the ground. This theory accounts for the attempts by Otto Lilienthal of Germany to fly by the flapping wing method. Another method used by Lilienthal and other European pioneers resulted in the creation of the glider. This creates air forces by the motion of an object through still air. As we have seen, the addition of a power to drive this object through the resistance of air finally culminated in the flight of the heavier-than-air plane by the Wright brothers.

Flight in power-driven aeroplanes in Europe began three years after the Wrights first flew in America. The first authenticated flight in Europe was made by Santos Dumont on October 23, 1906, when he flew for 200 feet at a speed of 25 miles per hour.⁽¹⁾ About three weeks later he increased the distance to 700 feet. A year later, on October 26, 1907, Henri Farman flew for about half a mile in a straight line at Issy les Moulineaux on a Voisin⁴ plane, following up this

(1) Aviation of Today-J.L. Nayler and E. Ower, Page 403.

To the men who were trying to imitate the bird in its flight the balloon was not wholly satisfactory. They knew that birds were heavier than the volume of air they displaced, and yet they could rise from the ground and travel at will. Some other method, not depending on air buoyancy, must therefore be possible, and the effort to find it continued.

These efforts were based on the principles that to every action there is an equal and opposite reaction. They reasoned that if there were some way to push downwards on the air, the air would push upwards to an equal amount. If this upward push was greater than the object pushing downwards, the object would rise from the ground. This theory accounts for the attempts by Otto Lilienthal of Germany to fly by the flapping wing method. Another method used by Lilienthal and other European pioneers resulted in the creation of the glider. This created air forces by the motion of an object through still air. As we have seen, the addition of a power to drive this object through the resistance of air finally culminated in the flight of the heavier-than-air plane by the Wright brothers.

Flight in power-driven aeroplanes in Europe began three years after the Wrights first flew in America. The first authenticated flight in Europe was made by Santos Dumont on October 23, 1906, when he flew for 200 feet at a speed of 25 miles per hour. About three weeks later he increased the distance to 700 feet. A year later, on October 23, 1907, Henri Farman flew for about half a mile in a straight line at 125 miles per hour on a Voisin plane, following up this

(1) *Aviation of Today*, by J. J. Cox, page 405.

feat on January 13, 1908, with the first European flight over a closed circuit of about a mile in length. On October 30, 1908, Farman, flying a Voisin biplane, made the first cross-country flight traveling from Chalons to Rheims, a distance of 17 miles in 20 minutes. The next day, his compatriot, Louis Bleriot, made a closed circuit cross-country flight from Toury to Artenay and back on his Bleriot VIII monoplane. Two descents were made en route, the total distance being 17 miles.

Other names now come upon the scene. Dumont, Farman and Bleriot were rivalled by Ferber, Latham, Tissandier, Paulhan, Delagrange, Lefebvre and others in France, while Curtiss achieved distinction in the United States.

In England, the first flight on a British machine - a short hop - was made by A. V. Roe (now Sir Alliot Roe) in 1909.⁽¹⁾ Prior to this flight Mr. S. F. Cody had been experimenting on Laffan's Plain, and on May 14, 1909, he made a successful flight of 1200 yards on a biplane driven by a 50 horse-power Antoinette engine. Cockburn and Graham-White must also be mentioned among the English pioneers.

The first crossing of the English Channel by Louis Bleriot on July 25, 1909 had a very great popular appeal because of its promise for the future of aerial communications. Another historical event, the first aviation meeting, was held at Rheims, France, during the week of August 22, 1909. At this meeting, there were thirty entrants, all pioneers in aviation, for the various prizes offered. The significance of this meeting was the support accorded it by the people. Other meetings were held, in which speeds, distances, and heights were improved.

(1) Aviation of Today-J.L. Nayler and E. Ower, Page 404.

first on January 13, 1908, with the first European flight over
 a closed circuit of about a mile in length. On October 30,
 1908, Farman, flying a Voisin biplane, made the first cross-
 country flight traveling from Chalais to Rheims, a distance
 of 17 miles in 20 minutes. The next day, his competitor,
 Louis Blériot, made a closed circuit cross-country flight from
 Toury to Arseny and back on his Blériot VIII monoplane. Two
 descents were made en route, the total distance being 17 miles.
 Other names now come upon the scene. Dumont, Farman
 and Blériot were rivalled by Ferber, Lacham, Tissandier, Paul-
 han, Delaunay, Lefebvre and others in France, while Curtiss
 achieved distinction in the United States.
 In England, the first flight on a British machine -
 a short hop - was made by A. V. Roe (now Sir Alister Roe) in
 1902. Prior to this flight Mr. S. P. Cody had been experi-
 menting on Lillie's Plain, and on May 14, 1902, he made a
 successful flight of 1200 yards on a biplane driven by a 30
 horse-power Antoinette engine. Cockburn and Graham-White
 must also be mentioned among the English pioneers.
 The first crossing of the English Channel by Louis
 Blériot on July 25, 1909 had a very great popular appeal
 because of its promise for the future of aerial communications.
 Another historical event, the first aviation meeting, was
 held at Rheims, France, during the week of August 22, 1909.
 At this meeting, there were thirty entrants, all pioneers in
 aviation, for the various prizes offered. The significance
 of this meeting was the support accorded it by the people.
 Other meetings were held, in which speeds, distances, and
 heights were improved.

It is true that many of the pioneers of flight did their experimenting at night rather than receive the jeers of their companions in the daytime. Such was the public mind in regard to aviation in 1860.

A few persons, six in number, attended the first flight by the Wright brothers, although the event had been announced to the general public on the day before. This attitude can be easily understood if we realize how very few men in the world at that time really knew anything about flying. Even the pioneers, themselves, had very little knowledge of the subject.

Popular interest began to awaken when Wilbur Wright made a trip to France in 1908.⁽¹⁾ He made some remarkable flights, which changed the future outlook of aviation in a marked degree. The general attitude of the public towards flying changed from one of amusement and toleration to one of intense interest and enthusiasm. Many men turned their minds toward aviation, and a great many devoted their time to the improvement of the aviation engine.

There were various events during the period 1908 to 1914, which created and nurtured public interest in aviation. A few outstanding events will be mentioned here.

First, the crossing of the English Channel by Louis Bleriot in 1909 met with a public realization of the possibilities of the aeroplane as a means of communication.

Second, an improvement in construction by substituting wheels in place of skids as a landing device was introduced.

Third, the creation of flying meetings for the purpose of

(1) Aviation of Today-J.L. Nayler and E. Ower, Page 403.

It is true that many of the pioneers of flight did their experimenting at night rather than receive the glare of their companions in the daytime. Such was the public mind in regard to aviation in 1860.

A few persons, six in number, attended the first flight by the Wright brothers, although the event had been announced to the general public on the day before. This attitude can be easily understood if we realize how very few men in the world at that time really knew anything about flying. Even the pioneers, themselves, had very little knowledge of the subject.

Popular interest began to awaken when Wilbur Wright made a trip to France in 1908. He made some remarkable flights which changed the future outlook of aviation in a marked degree. The general attitude of the public towards flying changed from one of amusement and toleration to one of intense interest and enthusiasm. Many men turned their minds toward aviation, and a great many devoted their time to the improvement of the aviation engine.

There were various events during the period 1908 to 1914, which created and nurtured public interest in aviation. A few outstanding events will be mentioned here.

First the crossing of the English Channel by Louis Blériot in 1909 met with a public realization of the possibilities of the aeroplane as a means of communication.

Second, an improvement in construction by substituting wheels in place of skids as a landing device was introduced. Third, the creation of flying meetings for the purpose of

stimulating public interest was proposed and adopted. These meetings attracted most of the noted airmen of the time who competed against one another for various prizes. Great crowds gathered to watch and cheer these brave men. When we consider that there was an almost complete lack of the theoretical knowledge of flying during this period, the performances of these pioneer aviators can truly be called great. Their flights were, however, not all successful when we witness the long list of deaths due to accidents during these flights. The men would not wait for the scientists to solve the many problems of aviation. They preferred to gain the experience and knowledge by practical flying. This they did, but only at great expense in human lives.

Fourth - Aerodynamic laboratories were established in France, Germany, Italy, Russia and America. An advisory committee for aeronautics was set up in England in 1909 to supervise research work in aviation. (1)

These events (and many others of lesser importance) did change the attitude of the people toward flying. They also served to awaken the nations of the world to the importance of this new art as an instrument of warfare. Every nation wanted to keep up with the developments of aviation, and, so, with government aid, great progress followed.

(1) Aviation of Today-J.L. Nayler and E Ower, Page 11.

attracted public interest was proposed and accepted. These meetings attracted most of the noted pilots of the time who competed against one another for various prizes. Great crowds gathered to watch and cheer these brave men. When we consider that there was an almost complete lack of the theoretical knowledge of flying during this period, the performances of these pioneer aviators can truly be called great. Their flights were, however, not all successful when we witness the long list of deaths due to accidents during these flights. The men would not wait for the scientists to solve the many problems of aviation. They preferred to gain the experience and knowledge by practical flying. This they did, but only at great expense in human lives.

Fourth - Aerodynamic Laboratories were established in

France, Germany, Italy, Russia and America. An advisory committee for aeronautics was set up in England in 1909 to supervise research work in aviation.

These events (and many others of lesser importance)

did change the attitude of the people toward flying. They also served to awaken the nations of the world to the importance of this new and as an instrument of warfare. Every nation wanted to keep up with the developments of aviation, and, so, with government aid, great progress followed.

(1) Aviation of Today - L. J. Taylor and J. G. Taylor, June 11.

Effect of World War on Aviation

The most important contribution by the World War to the future of aviation was the training of large numbers of men in the art of flying. The foundation of this new branch of a nation's defense, the air force, was built during the War. Every nation engaged in the great conflict quickly organized training schools of flying where thousands of men obtained instruction.

A description of these activities can best be given by a study of the work done in our own country during 1917-18. The United States was fortunate in regard to selecting men to be trained as pilots. Our colleges and universities gave us many young men, equipped with the necessary physical and mental capacities, to make good pilots.

A very severe physical examination was made of candidates before selection, perfect eyesight, perfect lungs and heart, and a perfect sense of balance being the prime requisites. The men selected were put into training schools of aviation. Here they were taught the parts of an airplane, and were taken into the air daily by instructors in order to become accustomed to the air. Taking the machine off the ground required that the pilot must hold the machine to the ground until it obtained sufficient speed to sustain it in the air. The handling of the controls of the machine received a great amount of attention and methods of avoiding serious accidents were shown to them. The safe landing of an airplane was the next step. This was one of the most difficult points for the student to master. He had to learn to approach the ground at a reduced speed and level the airplane at various

The most important contribution by the World War to the future of aviation was the training of large numbers of men in the art of flying. The foundation of this new branch of a nation's defense, the air force, was built during the war. Every nation engaged in the great conflict quickly organized training schools of flying where thousands of men obtained instruction.

A description of these activities can best be given by a study of the work done in our own country during 1917-18. The United States was fortunate in regard to selecting men to be trained as pilots. Our colleges and universities gave us many young men, equipped with the necessary physical and mental capacities, to make good pilots.

A very severe physical examination was made of candidates before selection, perfect eyesight, perfect lungs and heart, and a perfect sense of balance being the prime requisites. The men selected were put into training schools of aviation. Here they were taught the parts of an airplane and were taken into the air daily by instructors in order to become accustomed to the air. Taking the machine off the ground required that the pilot must hold the machine to the ground until it obtained sufficient speed to sustain it in the air. The handling of the controls of the machine received a great amount of attention and methods of avoiding serious accidents were shown to them. The safe landing of an airplane was the next step. This was one of the most difficult points for the student to master. He had to learn to approach the ground at a reduced speed and level the airplane at various

heights from the ground in order that all excess speed would be eliminated before landing. After these preliminary instructions which lasted from three to four months, the student was allowed to fly alone.

The United States made a great effort during the short period of its participation in the war to create a real air force. Over ten thousand men were taught to fly. Other thousands were taught airplane mechanics - the construction and repair of aircraft. Airplane factories were established and by the end of the war over seventeen thousand planes had been constructed.

Aside from the experience gained in a military sense, our greatest advantage was the establishment of a vast army of pilots and air officers. They were filled with enthusiasm for aviation. They knew that it was to become a huge factor in the future development of the world, and therefore after the war, many of these pilots remained in the service. Of these men we can truly say that they laid the foundation upon which our present aeronautical progress is based.

Immediately after the war, great activity in aviation was noted. The large army of pilots, discharged from the service, continued to be enthusiastic about flying. Many of them bought the surplus planes, made for war purposes by the Government, and entered upon a series of exhibition flights, cross-country tours, and flying circuses.

Aviation activities by the Government centered around four governmental agencies, namely:

The Army Air Service.

The Naval Bureau of Aeronautics.

The Air Mail Service

heights from the ground in order that all excess speed would be eliminated before landing. After these preliminary instructions which lasted from three to four months, the student was allowed to fly alone.

The United States made a great effort during the short

period of its participation in the war to create a real air force. Over ten thousand men were taught to fly. Other thousands were taught airplane mechanics - the construction and repair of aircraft. Airplane factories were established and by the end of the war over a hundred thousand planes had been constructed. Aside from the experience gained in a military sense, our greatest advantage was the establishment of a vast army of pilots and air officers. They were filled with enthusiasm for aviation. They knew that it was to become a huge factor in the future development of the world, and therefore after the war, many of these pilots remained in the service. Of these men we can truly say that they laid the foundation upon which our present aeronautical progress is based.

Immediately after the war, great activity in aviation was noted. The large army of pilots, discharged from the service, continued to be enthusiastic about flying. Many of them bought the surplus planes, made for war purposes by the Government, and entered upon a series of exhibition flights, cross-country tours, and flying circuses.

Aviation activities by the Government centered around

four governmental agencies, namely:

The Army Air Service.

The Naval Bureau of Aeronautics.

The Air Mail Service.

The National Advisory Committee for Aeronautics.

A brief description of the functions of these agencies is given in order to show the activity of the Government in developing aviation after the war.

The Army Air Service was established June 4, 1920, and functioned under the control of the Secretary of War as a coordinate branch of the army. It had three specific functions, (1) as a part of the mobile army; (2) as a weapon against enemy aircraft in defense of all shore establishments; (3) a weapon to be used in cooperation with other arms, or alone, against enemy vessels engaged in attacks on the coast.

Although the Army Air Service was primarily a military agency, it proved the value of aviation in times of peace by performing many activities which were not of a military nature, e.g., forest fire patrol; aerial survey and mapping; combating insects such as the gypsy moth and the boll weevil. Due to the experiments conducted by the Army Air Service night flying was proven successful and later used by the Air Mail Service.

Other activities included the development of aerial photography, the establishment of airways between principal cities of the United States, the preparation of data on air routes and landing fields, and the training of pilots. All of these activities furnished valuable information that was used later on by commercial organizations of aviation.

The Army Air Service, in order to enlighten the general public as to the possibilities of aviation, completed several important flights, such as the various trans-continental flights, the around-the-world flight, the Porto Rican flight.

The National Advisory Committee for Aeronautics.

A brief description of the functions of these agencies is given in order to show the activity of the Government in developing aviation after the war.

The Army Air Service was established June 4, 1920.

and functioned under the control of the Secretary of War as a coordinate branch of the army. It had three specific functions, (1) as a part of the mobile army; (2) as a weapon against enemy aircraft in defense of all shore establishments; (3) a weapon to be used in cooperation with other arms, or alone, against enemy vessels engaged in attacks on the coast.

Although the Army Air Service was primarily a military agency, it proved the value of aviation in times of peace by performing many activities which were not of a military nature, e.g., forest fire patrol; aerial survey and mapping; combating insects such as the gypsy moth and the boll weevil. One of the experiments conducted by the Army Air Service night flying was proven successful and later used by the Air Mail Service.

Other activities included the development of aerial photography, the establishment of airways between principal cities of the United States, the preparation of data on air routes and landing fields, and the training of pilots. All of these activities furnished valuable information that was used later on by commercial organizations of aviation.

The Army Air Service, in order to enlighten the general public as to the possibilities of aviation, completed several important flights, such as the various trans-continental flights, the around-the-world flight, the Porto Rican flight.

The Naval Bureau of Aeronautics was established July 12, 1921. Under this bureau, naval aviation formed a part of the fleet. Its functions included: development of service types of airplanes, engines, and accessories; development of rigid airships; installation of aircraft on vessels of the fleet; development of aircraft carriers; training of regular and reserve aviation personnel; and cooperation with other government agencies and civil aeronautic organizations for the furtherance of aviation development.

The Air Mail Service directly operated by the Post Office Department started on May 15, 1918, with the establishment of a route between Washington and New York. One of the purposes of the establishment of this service was to demonstrate the safety, reliability, and practicability of air transportation in general. The extent to which the Air Mail Service has helped commercial aviation in the years following 1918 is fully described in a later chapter of this thesis.

The National Advisory Committee for Aeronautics was established in 1915.⁽¹⁾ Twelve members compose the committee, and all are appointed by the President. They are chosen according to the following plan:

Two members from the War Department.

Two members from the Navy Department.

One member from the Weather Bureau.

One member from the Bureau of Standards.

One member from the Smithsonian Institution.

Five others are chosen from private life, and are men who

(1) National Regulation of Aeronautics-Charles C. Rohlffing, Page 7.

The Navy Department has been...
12, 1921. Under this program, Navy...
the first. The Department...
types of aircraft, engines, and...
first aircraft...
first development of aircraft...
and reserve aviation personnel; and...
government activities and civil...
the importance of aviation development.

The air mail service...
Office Department started on May 15, 1918, with the...
ishment of a route between Washington and New York...
the purpose of the establishment of this service was to...
increase the safety, reliability, and...
the operation in general. The extent to which the air mail...
service has helped commercial aviation in the years following...
1918 is being covered in a later chapter of this report.

The National Advisory Committee for Aeronautics was...
established in 1915. Its...
and all are appointed by the President. They are chosen...
according to the following plan:

- Two members from the War Department.
- Two members from the Navy Department.
- One member from the Federal Reserve.
- One member from the Bureau of Standards.
- One member from the Smithsonian Institution.
- Five experts are chosen from private life, and one who...

are acquainted with the needs of aeronautical science or skilled in aeronautical engineering or its allied sciences.

The law creating the Committee provides that it shall be the duty of the Committee to supervise and direct the scientific study of the problems of flight, with a view to their practical solution, and to determine the problems which should be experimentally attacked.

Although most of the activity in the development of aviation from the end of the war to 1924 was of a military nature, we can be assured that the progress made was beneficial to all aviation. There has been little application of aviation, however, to commercial purposes during this period in the United States. In the European countries, a greater amount of activity along commercial lines for the transportation of passengers and goods on regular schedules across international boundaries existed. The reason for this difference was because of the geographic position of these European countries. They were closer to one another and therefore realized the necessity of an air defense. Unless military aviation was to bear the whole cost of maintenance of aircraft industries and development, commercial aviation had to be encouraged and subsidized.

In the United States there was no regular air transportation business, although a few firms did try to establish regular routes between certain points. The activity of the United States Air Mail Service contributed a great amount of experience which was to be used at a later date by commercial aviation companies.

are acquainted with the needs of aeronautical science or skilled in aeronautical engineering or its allied sciences.

The law creating the Committee provides that it shall be the duty of the Committee to supervise and direct the scientific study of the problems of flight, with a view to their practical solution, and to determine the problems which should be experimentally attacked.

Although most of the activity in the development of

aviation from the end of the war to 1934 was of a military nature, we can be assured that the progress made was beneficial to civil aviation. There has been little application of aviation, however, to commercial purposes during this period in the United States. In the European countries, a greater amount of activity along commercial lines for the transportation of passengers and goods on regular schedules across international boundaries

existed. The reason for this difference was because of the geographic position of these European countries. They were closer to one another and therefore realized the necessity of an air service. Unless military aviation was to bear the whole cost of maintenance of aircraft industries and development, commercial aviation had to be encouraged and subsidized.

In the United States there was no regular air transportation business, although a few firms did try to establish regular routes between certain points. The activity of the United States Air Mail Service constituted a great amount of experience which was to be used at a later date by commercial aviation companies.

Recognition of Air Transportation

As previously stated, the work of the Post Office Department in the operation of an Air Mail Service did more for the furtherance of commercial aviation than any other factor. In 1922, it began experiments in night flying because it realized that if air mail was to accomplish its task completely it would have to fly at night as well as day. The experiments proved successful. The Post Office Department completed the lighting of 2041 miles of airways between New York and Salt Lake City.⁽¹⁾ This accomplishment proved the practicability of air transportation. Mail was delivered from coast to coast with such remarkable speed that a few years later the carrying of mails on regular day-and-night schedules was given by the Government to private companies.

With the organization of the trans-continental air-mail service, a start was made, and, gradually, air transportation of passengers and freight became recognized as practicable. The fact that the airplane had so great a speed over every other means of transportation gave it a preference when haste was more important than cost.

In order that commercial aviation might become more fully developed the Government of the United States passed the Air Commerce Act of 1926. This legislation charged the Secretary of Commerce with the responsibility of promoting and regulating air commerce. It definitely marked the beginning of an organized effort to place aeronautics in the general transportation scheme of the Nation.

Immediately after the passage of this act, an Aeronautics Branch of the Department of Commerce was organized.

⁽¹⁾U.S. Department of Commerce, Air Commerce Bulletin #1, Page 12.

Development of Air Transport

As previously stated, the work of the Post Office Department in the operation of an air mail service has been for the improvement of commercial aviation, and any other factor. In 1928, it began experiments in night flying. It is recalled that it was not until 1931 that the Post Office Department proved successful. The Post Office Department completed the flying of 2001 miles of airway between New York and Salt Lake City. The experimental proved the practicability of air transportation. Mail was delivered from coast to coast with such remarkable speed that a few years later the carrying of mail on regular day-and-night schedules was given by the Government to private companies. After the organization of the trans-continental air-mail service, a state was made, and, practically, air transportation of passengers and mail became recognized as practicable. The fact that the airplane had so great a speed over every other mode of transportation was a factor in its development when it was more important than cost. In order that commercial aviation might become more fully developed the Government of the United States passed the Air Commerce Act of 1926. This legislation created the Department of Commerce with the responsibility of promoting and regulating air commerce. It authorized within the Department an air mail division which was responsible in the general transportation system at the time. Legislation which the passage of this act, in 1926, was the first of the Government of Commerce was organized. The Department of Commerce, Air Commerce Division, was created.

This branch was divided into two principal divisions: the Air Navigation Division and the Air Regulation Division. The Aeronautics Branch is now in its eighth year of existence, under the name of the Bureau of Air Commerce. A full description of the activities of this Bureau is given in Chapter II.

Recognition of commercial air transportation by the Government in 1926 gave to the private enterprises the impetus needed for additional improvements. In airplane design and engine design many improvements were made. The supply of war surplus aircraft was exhausted about the end of 1926, as was also the supply of engines. The production of new commercial types of aircraft doubled, and the cabin airplane displaced the military type.

The cabin airplane provided a new comfort and luxury to air travel that was unknown in prior years. New and better engines were installed producing more horsepower and less weight. All the improvements brought about by research in aero-dynamics were embodied in this new type of airplane.

In cooperation with the Aeronautics Branch, private companies used every means at hand to increase the safety of flying. Government aid in providing lighted airways, landing fields, and weather reports, certainly deserves recognition here. Safety was, of course, the first thought of the public in patronizing this new transportation medium. The record of improvements in this direction is one of the important factors that make commercial aviation a sound and practical means of transport.

Air transportation was recognized in Europe immediately after the World War in 1918. Air lines were established and heavily subsidized by the nations. As pre-

This branch was divided into two principal divisions: The Air
Navigation Division and the Air Regulation Division. The
Aeronautics Branch is now in its eighth year of existence, under
the name of the Bureau of Air Commerce. A full description of
the activities of this Bureau is given in Chapter II.

Recognition of commercial air transportation by the
Government in 1925 gave to the private enterprise the impetus
needed for additional improvements. In airplane design and
engine design many improvements were made. The supply of war
airplane aircraft was exhausted about the end of 1925, as was
also the supply of engines. The production of new commercial
types of aircraft doubled, and the cabin airplane displaced
the military type.

The cabin airplane provided a new comfort and luxury
to air travel that was unknown in prior years. New and better
engines were installed producing more horsepower and less
weight. All the improvements brought about by research in
aero-dynamics were embodied in this new type of airplane.

In cooperation with the Aeronautics Branch, private
companies used every means at hand to increase the safety of
flying. Government aid in providing lighted airways, landing
fields, and weather reports, certainly deserves recognition
here. Safety was, of course, the first thought of the public
in patronizing this new transportation medium. The record
of improvements in this direction is one of the important
factors that make commercial aviation a sound and practical
means of transport.

Air transportation was recognized in Europe im-
mediately after the World War in 1918. Air lines were es-
tablished and heavily subsidized by the nations. As pre-

viously explained, the geographic positions of these nations and the desire to be prepared for attack necessitated the building of a military air force. By rendering financial aid to private operators, they were able to build a reserve military air force much more cheaply than would be otherwise possible. As a result, Europe forged ahead in commercial aviation much more rapidly than did the United States.

visually explained, the geographic positions of these nations
and the desire to be prepared for attack necessitated the
building of a military air force. By maintaining financial aid
to private operators, they were able to build a reserve
military air force much more cheaply than could be otherwise
possible. As a result, Europe forged ahead in commercial
aviation much more rapidly than did the United States.

Public Confidence Established in 1927.

The effect of the World War on aviation, as related in a previous section, was to bring the governments of the world to a realization that the airplane was destined to be a real weapon of war. They, therefore, set their plans immediately after the war for the development of various aviation activities with the sole purpose of creating a new military force. There is no question that this government interest did help to expand the aviation industry.

During the period from 1918 to 1927, however, the absence of the backing of the general public was very noticeable. The great majority of the public, especially in the United States, might be classed merely as onlookers. They needed to be aroused as to the progress that was being made in aviation.

The very thing needed to stir the minds of the American people occurred in 1927. The historical non-stop flight by Colonel Lindbergh from New York to Paris, followed by other spectacular flights across the Atlantic, not only aroused interest, but caused the general public to invest their money in the development of aviation.

There were two reasons why the general public, at this time, began to finance the aviation industry.⁽¹⁾ First, the tremendous publicity given the spectacular flights caused many people to imagine great future possibilities within the industry. They invested their money with the hope of large returns in the near future. Secondly, investigation into the affairs of aviation companies doing business during this time

(1) Financial Policies in the Aviation Industry-Paul A. Dodd, Pages 5 to 8 inclusive.

Public Confidence Established in 1927.

The effect of the World War on aviation, as related in a previous section, was to bring the Government of the world to a realization that the airplane was destined to be a real weapon of war. They, therefore, set their plans in motion after the war for the development of various aviation activities with the sole purpose of creating a new military force. There is no question that this Government interest did help to expand the aviation industry.

During the period from 1918 to 1927, however, the absence of the backing of the general public was very noticeable. The great majority of the public, especially in the United States, might be classed merely as onlookers. They needed to be aroused as to the progress that was being made in aviation.

The very thing needed to stir the minds of the American people occurred in 1927. The historical non-stop flight by Colonel Lindbergh from New York to Paris, followed by other spectacular flights across the Atlantic, not only aroused interest, but caused the general public to invest their money in the development of aviation.

There were two reasons why the general public, at this time, began to finance the aviation industry. First, the tremendous publicity given the spectacular flights caused many people to imagine great future possibilities within the industry. They invested their money with the hope of large returns in the near future. Secondly, investigation into the affairs of aviation companies doing business during this time (1) Financial Policies in the Aviation Industry, 1918-1927, Pages 2 to 8 inclusive.

showed that they were making profits. There was very little competition in the field and an increasing demand for aviation products would bring still larger profits.

With this new source of capital being invested, it naturally followed that many new companies entered the aviation industry. The activities of the government in awarding favorable contracts for air-mail service enlarged the market for production of aviation products. As a result of this expansion, a great number of small companies were competing against each other. It became evident, therefore, that if a sound industry was to be established, competition would have to be minimized by consolidation of these small companies into a few large ones.

The advantages to be gained by such consolidation were similar to those advantages gained by other industries upon their beginning periods of development.⁽¹⁾ The elimination of competition, larger purchasing power, economies in production, and a stronger financial position, would result in such a move. As a result of this consolidation movement, several national airways were established, providing air mail and passenger service. A few large holding companies controlled the major portion of the industry. In 1929, the bankers and financiers were ready to invest. Thus we may conclude that the aviation industry had become established on a sound financial structure.

(1) Financial Policies in the Aviation Industry-Paul A. Dodd, Pages 12 and 13.

showed that they were making profits. There was very little competition in the field and an increasing demand for aviation products would bring still larger profits.

With this new source of capital being invested, it naturally followed that many new companies entered the aviation industry. The activities of the government in awarding favorable contracts for air-mail service enlarged the market for production of aviation products. As a result of this expansion, a great number of small companies were competing against each other. It became evident, therefore, that if a sound industry was to be established, competition would have to be minimized by consolidation of these small companies into a few large ones.

The advantages to be gained by such consolidation were similar to those advantages gained by other industries upon their beginning periods of development.⁽¹⁾ The elimination of competition, largest purchasing power, economical production, and a stronger financial position, would result in such a move. As a result of this consolidation movement, several national airways were established, providing air mail and passenger service. A few large holding companies controlled the major portion of the industry. In 1929, the bankers and financiers were ready to invest. Thus we may conclude that the aviation industry had become established on a sound financial structure.

(1) Financial Position in the Aviation Industry, 1929-30, pp. 12 and 13.

A good illustration of this consolidation movement occurred at the time of awarding of mail contracts for the year 1931. The Air Transport, Inc. and Western Air Express Corporation were bidders for the central transcontinental route between New York and Los Angeles. The United States Post Office Department required an operating agreement between these two companies. Because of this fact, a consolidation of the companies resulted and the Transcontinental and Western Air, Inc., was organized.⁽¹⁾

(1) Financial Policies in the Aviation Industry-Paul A. Dodd, Page 13.

A good illustration of this consolidation movement occurred at the time of awarding of mail contracts for the year 1931. The Air Transport, Inc. and Western Air Express Corporation were bidders for the central transcontinental route between New York and Los Angeles. The United States Post Office Department required an operating agreement between these two companies. Because of this fact, a consolidation of the companies resulted and the Transcontinental and Western Air, Inc., was organized. (1)

(1) Financial Policies in the Aviation Industry - Paul A. Goddard, Page 15.

CHAPTER II

The Growth of International Aviation for Period 1926 to 1934

Government Aid in Regulating Air Operations.

The period from 1926 to 1934 has been chosen because it includes within it the beginning of an organized effort, upon the part of the government, to establish the aeronautic industry as an additional means of transportation. Although this effort was primarily centered in the development of domestic air service, definite aid to foreign or international service also began at this time.

Previous to 1926 a few international routes from the United States existed. Foreign air mail service between Seattle, Washington, and Victoria, British Columbia, was established October 15, 1920. Another route from Key West, Florida to Habana, Cuba, was started on the same date. It is of interest to note here that this latter route was discontinued in 1923, was resumed in 1927, and became the first link of the great Latin-American system.

Previous to 1926, all the activities of the government in fostering an air mail service came through the Post Office Department. The passage of the Kelly Air-Mail Act, on February 2, 1925, authorized this department to turn over transportation of air mail to private enterprise by contracting for its carriage at rates not to exceed three dollars a pound. At the beginning of 1926, the provisions of this act were being put into practice; by the end of the year fourteen domestic air routes were being operated under contract.⁽¹⁾

(1) Department of Commerce, Aeronautics Bulletin #1 page 12.

CHAPTER II

The Growth of International Aviation for Period 1923 to 1934

Government Aid in Regulating Air Operations.

The period from 1923 to 1934 has been chosen because

it includes within it the beginning of an organized effort upon the part of the government, to establish the aeronautic industry as an additional means of transportation. Although this effort was primarily centered in the development of domestic air service, definite aid to foreign or international service also began at this time.

Previous to 1923 a few international routes from the United States existed. Foreign air mail service between Seattle, Washington, and Victoria, British Columbia, was established October 15, 1920. Another route from Key West, Florida to Havana, Cuba, was started on the same date. It is of interest to note here that this latter route was discontinued in 1923, was resumed in 1927, and became the first link of the great Latin-American system.

Previous to 1923, all the activities of the government in fostering an air mail service came through the Post Office Department. The passage of the Kelly Air-Mail Act, on February 8, 1925, authorized this department to turn over transportation of air mail to private enterprises by contract. For its carriage at rates not to exceed three dollars a pound. At the beginning of 1925, the provisions of this act were being put into practice; by the end of the year fourteen domestic air routes were being operated under contract.

The passage of the Air Commerce Act on May 20, 1926, is one of the most important events in the history of aviation in the United States. It marks the beginning of a real effort upon the part of the government to develop commercial aviation. In order to set forth clearly the importance of this legislation, certain sections of the Act are reprinted here.

Taken from the Code of Laws of the United States of America in Force December 6, 1926.

Section 2.- Promotion of Air Commerce.-It shall be the duty of the Secretary of Commerce to foster air commerce in accordance with the provisions of this Act and for such purpose -

(a) To encourage the establishment of airports, civil airways, and other air navigation facilities.

(b) To make recommendations to the Secretary of Agriculture as to necessary meteorological service.

(c) To study the possibilities for the development of air commerce and the aeronautical industry and trade in the United States and to collect and disseminate information relative thereto and also as regards the existing state of the art.

(d) To advise with the Bureau of Standards and other agencies in the executive branch of the Government in carrying forward such research and development work as tends to create improved air navigation facilities. The Secretary of Commerce is authorized to transfer funds available for carrying out the purposes of this subdivision to any such agency for carrying forward such research and development work in cooperation with the Department of Commerce.

(e) To investigate, record, and make public the causes

The passage of the Air Commerce Act on May 20, 1926,

is one of the most important events in the history of aviation in the United States. It marks the beginning of a real effort upon the part of the Government to develop commercial aviation. In order to set forth clearly the importance of this legislation, certain sections of the Act are reprinted here.

Taken from the Code of Laws of the United States of America in Force December 6, 1926.

Section 2. - Promotion of Air Commerce. - It shall be the duty of the Secretary of Commerce to foster air commerce in accordance with the provisions of this Act and for such purpose -

- (a) To encourage the establishment of airports, civil airways, and other air navigation facilities.
- (b) To make recommendations to the Secretary of Agriculture as to necessary meteorological service.
- (c) To study the possibilities for the development of air commerce and the aeronautical industry and trade in the United States and to collect and disseminate information relative thereto and also as regards the existing state of the art.
- (d) To advise with the Bureau of Standards and other agencies in the executive branch of the Government in carrying forward such research and development work as tends to create improved air navigation facilities. The Secretary of Commerce is authorized to transfer funds available for carrying out the purposes of this subdivision to any such agency for carrying forward such research and development work in cooperation with the Department of Commerce.
- (e) To investigate, record, and make public the causes

of accidents in civil air navigation in the United States.

(f) To exchange with foreign governments through existing governmental channels information pertaining to civil air navigation.

Section 6.

Foreign Aircraft.- (a) The Congress hereby declares that the Government of the United States has, to the exclusion of all foreign nations, complete sovereignty of the airspace over the lands and waters of the United States, including the Canal Zone. Aircraft a part of the armed forces of any foreign nation shall not be navigated in the United States, including the Canal Zone, except in accordance with an authorization granted by the Secretary of State. (b) Foreign aircraft not a part of the armed forces of the foreign nation shall be navigated in the United States only if authorized as hereinafter in this section provided; and if so authorized, such aircraft and airmen serving in connection therewith, shall be subject to the requirements of section 3, unless exempt under subdivision (c) of this section. (c) If a foreign nation grants a similar privilege in respect of aircraft of the United States, and/or airmen serving in connection therewith, the Secretary of Commerce may authorize aircraft registered under the law of the foreign nation and not a part of the armed forces thereof to be navigated in the United States, and may by regulation exempt such aircraft, and or airmen serving in connection therewith, from the requirements of section 3, other than the traffic rules; but no foreign aircraft shall engage in interstate or intrastate air commerce.

Section 7.

Application of Existing Laws Relating to Foreign Commerce.-

of accidents in civil air navigation in the United States.
(f) To exchange with foreign governments through exist-
ing governmental channels information pertaining to civil
air navigation.

Section 6.

Foreign Aircraft. (a) The Congress hereby declares that the
Government of the United States has, to the exclusion of all
foreign nations, complete sovereignty of the airspace over the
lands and waters of the United States, including the Canal Zone.
Aircraft a part of the armed forces of any foreign nation shall
not be navigated in the United States, including the Canal Zone,
except in accordance with an authorization granted by the
Secretary of State. (b) Foreign aircraft not a part of the
armed forces of the foreign nation shall be navigated in the
United States only if authorized as hereinafter in this section
provided; and if so authorized, such aircraft and airman serv-
ing in connection therewith, shall be subject to the regula-
ments of section 5, unless exempt under subdivision (c) of
this section. (c) If a foreign nation grants a similar
privilege in respect of aircraft of the United States, and/or
airmen serving in connection therewith, the Secretary of
Commerce may authorize aircraft registered under the law of
the foreign nation and not a part of the armed forces thereof
to be navigated in the United States, and may by regulation
exempt such aircraft, and or airmen serving in connection
therewith, from the requirements of section 5, other than the
traffic rules; but no foreign aircraft shall engage in inter-
state or interstate air commerce.

Section 7.

Application of existing laws relating to foreign commerce.

(a) The navigation and shipping laws of the United States, including any definition of "vessel" or "vehicle" found therein and including the rules for the prevention of collisions, shall not be construed to apply to seaplanes or other aircraft or to the navigation of vessels in relation to seaplanes or other aircraft. (b) The Secretary of the Treasury is authorized to (1) designate places in the United States as ports of entry for civil aircraft arriving in the United States from any place outside thereof and for merchandise carried on such aircraft, (2) detail to ports of entry for civil aircraft such officers and employees of the customs service as he may deem necessary, and to confer or impose upon any officer or employee of the United States stationed at any such port of entry (with the consent of the head of the Government department or other independent establishment under whose jurisdiction the officer or employee is serving) any of the powers, privileges, or duties conferred or imposed upon officers or employees of the customs service, and (3) by regulation to provide for the application to civil air navigation of the laws and regulations relating to the administration of the customs and regulations relating to the administration of the customs and public health laws to such extent and upon such conditions as he deems necessary. (c) The Secretary of Commerce is authorized by regulation to provide for the application to civil aircraft of the laws and regulations relating to the entry and clearance of vessels to such extent and upon such conditions as he deems necessary. (d) The Secretary of Labor is authorized to (1) designate any of the ports of entry for civil aircraft as ports of entry for aliens arriving by aircraft, (2) detail to such ports of entry such officers and employees of the immigration services as he

(a) The navigation and shipping laws of the United States, including any definition of "vessel" or "vehicle" found therein and including the rules for the prevention of collisions, shall not be construed to apply to seaplanes or other aircraft or to the navigation of vessels in relation to seaplanes or other aircraft. (b) The Secretary of the Treasury is authorized to (1) designate places in the United States as ports of entry for civil aircraft arriving in the United States from any place outside thereof and for merchandise carried on such aircraft, (2) detail to ports of entry for civil aircraft such officers and employees of the customs service as he may deem necessary, and to confer or impose upon any officer or employee of the United States stationed at any such port of entry (with the consent of the head of the Government department or other independent establishment under whose jurisdiction the officer or employee is serving) any of the powers, privileges, or duties conferred or imposed upon officers or employees of the customs service, and (3) by regulation to provide for the application to civil air navigation of the laws and regulations relating to the administration of the customs and regulations relating to the administration of the customs and public health laws to such extent and upon such conditions as he deems necessary. (c) The Secretary of Commerce is authorized by regulation to provide for the application to civil aircraft of the laws and regulations relating to the entry and clearance of vessels to such extent and upon such conditions as he deems necessary. (d) The Secretary of Labor is authorized to (1) designate any of the ports of entry for civil aircraft as ports of entry for aliens arriving by aircraft, (2) detail to such ports of entry such officers and employees of the immigration service as he

may deem necessary, and to confer or impose upon any employee of the United States stationed at such port of entry (with the consent of the head of the Government department or other independent establishment under whose jurisdiction the officer or employee is serving) any of the powers, privileges, or duties conferred or imposed upon officers or employees of the immigration service, and (3) by regulation to provide for the application to civil air navigation of the laws and regulations relating to the administration of the immigration laws to such extent and upon such conditions as he deems necessary.

may deem necessary, and to confer or impose upon any employee of the United States stationed at such port of entry (with the consent of the head of the Government department or other independent establishment under whose jurisdiction the officer or employee is serving) any of the powers, privileges, or duties conferred or imposed upon officers or employees of the immigration service, and (3) by regulation to provide for the application to civil air navigation of the laws and regulations relating to the administration of the immigration laws to such extent and upon such conditions as he deems necessary.

Section 8.

Powers of Secretary of Commerce; regulations; expenditures; publication of bulletins; acquisition and operation of aircraft; etc. - Except as otherwise specifically provided, the Secretary of Commerce shall administer the provisions of this act and for such purpose is authorized (1) to make such regulations as are necessary to execute the functions vested in him by this Act; (2) to make such expenditures (including expenditures for personal services and rent at the seat of government and elsewhere and for law books, books of reference, and periodicals) as may be necessary for such administration and as may be provided by the Congress from time to time; (3) to publish from time to time a bulletin setting forth such matters relating to the functions vested in him by this Act as he deems it advisable, including air navigation treaties, laws, and regulations and decisions thereunder; and (4) to operate, and for this purpose to acquire within the limits of the available appropriations hereafter made by the Congress, such aircraft and air navigation facilities, except airports, as are necessary for executing the functions vested in the Secretary of Commerce by this Act.

Section 9. Definitions.-

As used in this Act - (a) The term "citizen of the United States" means (1) an individual who is a citizen of the United States or its possessions or (2) a partnership of which each member is an individual who is a citizen of the United States or its possessions, or (3) a corporation or association created or organized in the United States or under the law of the United States or of any State, Territory, or possession thereof, of which the president and two-thirds

owers of Secretary of Commerce; regulations; expenditure; publication of bulletins; acquisition and operation of air-traffic; etc. - Except as otherwise specifically provided, the Secretary of Commerce shall administer the provisions of this act and for such purpose is authorized (1) to make such regulations as are necessary to execute the functions vested in him by this act; (2) to make such expenditures (including expenditures for personal services and rent at the seat of government and elsewhere and for law books, books of reference, and periodicals) as may be necessary for such administration and as may be provided by the Congress from time to time; (3) to publish from time to time a bulletin setting forth such matters relating to the functions vested in him by this act as he deems it advisable, including air navigation treaties, laws, and regulations and decisions thereunder; and (4) to operate, and for this purpose to acquire within the limits of the available appropriations hereafter made by the Congress, such aircraft and air navigation facilities, except aircraft, as are necessary for executing the functions vested in the Secretary of Commerce by this act.

Section 6. Definitions.

As used in this act - (a) The term "citizen of the United States" means (1) an individual who is a citizen of the United States or its possessions or (2) a partnership of which each member is an individual who is a citizen of the United States or its possessions, or (3) a corporation or association created or organized in the United States or under the law of the United States or of any State, Territory, or possession thereof, of which the president and two-thirds

or more of the board of directors or other managing officers thereof, as the case may be, are individuals who are citizens of the United States or its possessions and in which at least 51 per centum of the voting interest is controlled by persons who are citizens of the United States or its possessions.

(b) The term "United States", when used in a geographical sense, means the territory comprising the several States, Territories, possessions, and the District of Columbia (including the territorial waters thereof), and the overlying airspace; but shall not include the Canal Zone. (c) The term "aircraft" means any contrivance now known or hereafter invented, used, or designed for navigation of or flight in the air, except a parachute or other contrivance designed for such navigation but used primarily as safety equipment. (d) The term "public aircraft" means an aircraft used exclusively in the governmental service. (e) The term "civil aircraft" means any aircraft other than a public aircraft. (f) The term "aircraft of the United States" means any aircraft registered under this Act. (g) The term "airport" means any locality, either of water or land, which is adapted for the landing and taking off of aircraft and which provides facilities for shelter, supply, and repair of aircraft; or a place used regularly for receiving or discharging passengers or cargo by air. (h) The term "emergency landing field" means any locality, either water or land, which is adapted for the landing and taking off of aircraft, is located along an airway, and is intermediate to airports connected by the airway, but which is not equipped with facilities for shelter, supply, and repair of aircraft and is not used regularly for the receipt

or more of the board of directors or other managing officers thereof, as the case may be, are individuals who are citizens of the United States or its possessions and in which at least 51 per centum of the voting interest is controlled by persons who are citizens of the United States or its possessions.

(b) The term "United States", when used in a geographical sense, means the territory comprising the several States, Territories, possessions, and the District of Columbia (including the territorial waters thereof), and the overlying airspace; but shall not include the Canal Zone. (c) The term "aircraft" means any contrivance now known or hereafter invented, used, or designed for navigation of or flight in the air, except a parachute or other contrivance designed for such navigation but used primarily as safety equipment. (d) The term "public aircraft" means an aircraft used exclusively in the Governmental service. (e) The term "civil aircraft" means any aircraft other than a public aircraft. (f) The term "aircraft of the United States" means any aircraft registered under this Act. (g) The term "airport" means any locality, either of water or land, which is adapted for the landing and taking off of aircraft and which provides facilities for shelter, supply, and repair of aircraft; or a place used regularly for receiving or discharging passengers or cargo by air. (h) The term "emergency landing field" means any locality, either water or land, which is adapted for the landing and taking off of aircraft, is located along an airway, and is intermediate to airports connected by the airway, but which is not equipped with facilities for shelter, supply, and repair of aircraft and is not used regularly for the receipt

or discharge of passengers or cargo by air. (i) The term "air navigation facility" includes any airport, emergency landing field, light or other signal structure, radio directional finding facility, radio or other electrical communication facility, and any other structure or facility, used as an aid to air navigation. (j) The term "civil airway" means a route in the navigable airspace designated by the Secretary of Commerce as a route suitable for interstate or foreign air commerce. (k) The term "airman" means any individual (including the person in command and any pilot, mechanic, or member of the crew) who engages in the navigation of aircraft while under way, and any individual who is in charge of the inspection, overhauling, or repairing of aircraft.

Section 10.

Navigable airspace.- As used in this Act, the term "navigable airspace" means airspace above the minimum safe altitudes of flight prescribed by the Secretary of Commerce under section 3, and such navigable airspace shall be subject to a public right of freedom of interstate and foreign air navigation in conformity with the requirements of this Act.

As a result of this Act, an Aeronautics Branch of the Department of Commerce was established. Under the supervision of a Director of Aeronautics, the Branch was divided into two sections, the Air Navigation Division and the Air Regulation Division. Two other sections, not attached to either of the principal divisions, but responsible to the Director, consisted of an Administrative Section and an Information Section.

Effective July 1, 1934, the name of the Branch has been changed to Bureau of Air Commerce and the title of the Director has been changed to Director of Air Commerce.

or discharge of passengers or cargo by air. (1) The term "air navigation facility" includes any airport, emergency landing field, light or other signal structure, radio directional finding facility, radio or other electrical communication facility, and any other structure or facility, used as an aid to air navigation. (2) The term "civil airway" means a route in the navigable airspace designated by the Secretary of Commerce as a route suitable for interstate or foreign air commerce. (3) The term "airman" means any individual (including the person in command and any pilot, mechanic, or member of the crew) who engages in the navigation of aircraft while under way, and any individual who is in charge of the inspection, overhauling, or repairing of aircraft.

Section 10.

Navigable airspace. - As used in this Act, the term "navigable airspace" means airspace above the minimum safe altitudes of flight prescribed by the Secretary of Commerce under section 3, and such navigable airspace shall be subject to a public right of freedom of interstate and foreign air navigation in conformity with the requirements of this Act.

As a result of this Act, an Aeronautics Branch of the Department of Commerce was established. Under the supervision of a Director of Aeronautics, the Branch was divided into two sections, the Air Navigation Division and the Air Regulation Division. Two other sections, not attached to either of the principal divisions, but responsible to the Director, consisted of an Administrative Section and an Information Section.

Effective July 1, 1934, the name of the Branch has been changed to Bureau of Air Commerce and the title of the Director has been changed to Director of Air Commerce.

The organization of the Bureau remains the same. In chapter III, the functions of the Bureau are described in detail.

The accomplishments of the Bureau of Air Commerce, after over eight years of existence, are summarized here.

Its activities extend to every state in the Union, and its primary purpose is to assure safety of flight. The various aids to air navigation which it has established are:⁽¹⁾

1. The Federal Airways Systems

Beacon lights, intermediate landing fields, radio stations, and weather reporting facilities of this system are available to all who fly. This system covers nearly 20,000 miles of routes.

2. Aeronautics Research

Research is constantly being made on aids to air navigation.

3. Airport Consultation

Government experts on the engineering phases of airport development are available to cities engaged in such work.

4. Airway Mapping

Sectional airway maps have been prepared as an aid to those who fly.

5. Regulation of Air Commerce

Licenses are issued to aircraft and airmen. Federal guidance is given to all who are engaged in the aviation industry. Regulations as to the airworthiness of aircraft,

(1) U. S. Department of Commerce-Civil Aeronautics in the United States, Bulletin #1, Pages 34 to 46.

The organization of the Bureau remains the same. In Chapter III, the functions of the Bureau are described in detail.

The accomplishments of the Bureau of Air Commerce, after over eight years of existence, are summarized here. Its activities extend to every state in the Union, and its primary purpose is to assure safety of flight. The various aids to air navigation which it has established are:

1. The Federal Airways System

Beacon lights, intermediate landing fields, radio stations, and weather reporting facilities of this system are available to all who fly. This system covers nearly 20,000 miles of routes.

2. Aeronautics Research

Research is constantly being made on aids to air navigation.

3. Airport Construction

Government experts on the engineering phases of airport development are available to cities engaged in such work.

4. Airway Mapping

Sectional airway maps have been prepared as an aid to those who fly.

5. Regulation of Air Commerce

Licenses are issued to aircraft and airmen. Federal guidance is given to all who are engaged in the aviation industry. Regulations as to the airworthiness of aircraft.

competency of personnel, adequacy of ground facilities are enforced by the Bureau of Air Commerce.

6. Flying Schools, Repair Stations, and Airports.

Approval of these by the Bureau assures the public that certain safety requirements are complied with.

7. Airline Regulations.

The Bureau issues certificates of authority to operate, which guarantee that the equipment and personnel of licensed companies have been approved by the Bureau.

8. Accident Reports.

Reports of all accidents in civil aeronautics are studied by the Accident Board.

9. Inspectors.

They examine pilots and mechanics; they inspect aircraft. Aeronautical school inspectors study the equipment and facilities of civilian flying schools. Airplane factory inspectors devote their time to inspection of airplanes during construction. Air-line inspectors investigate the equipment and facilities of interstate passenger airlines.

Under the guidance of governmental regulations and aids, the aviation industry passed through a period of rapid expansion. The development of an efficient air mail service was the basis used by the government in promoting air commerce. In this field the United States quickly became the

competency of personnel, adequacy of ground facilities are enforced by the Bureau of Air Commerce.

6. Flying Schools, Repair Stations, and Airports.

Approval of these by the Bureau assures the public that certain safety requirements are complied with.

7. Airline Regulations.

The Bureau issues certificates of authority to operate, which guarantee that the equipment and personnel of licensed companies have been approved by the Bureau.

8. Accident Reports.

Reports of all accidents in civil aeronautics are studied by the Accident Board.

9. Inspectors.

They examine pilots and mechanics; they inspect aircraft. Aeronautical school inspectors study the equipment and facilities of civilian flying schools. Airplane factory inspectors devote their time to inspection of airplanes during construction. Air-line inspectors investigate the equipment and facilities of interstate passenger airlines.

Under the guidance of governmental regulations and aids, the aviation industry passed through a period of rapid expansion. The development of an efficient air mail service was the basis used by the government in promoting air commerce. In this field the United States quickly became the

leader in so far as operating reliability and efficient performance were concerned.

While the United States Government was establishing air routes based on the transportation of mail, the governments of Europe were aiding in the creation of air routes based on passenger traffic. In Europe, government aid consisted of large subsidies to privately-operated companies. The purpose of this policy was two-fold; first, to build an air force for military purposes, and second, to keep up with the developments in aeronautics for commercial purposes.

The development of passenger routes in Europe brought the general public into direct contact with aviation. This policy did create the belief that European aviation was far ahead of that of the United States. In the establishment of airports and adequate equipment for passenger services, Europe did have the lead. The passenger airplane was also developed, both in size and interior equipment, far ahead of those used in the United States. At the close of 1926, the first year of contract mail operations in the United States, operating efficiency improved greatly and compared favorably with aviation activities abroad.

Growth of Private Companies

One of the many events, which occurred during the first years of governmental aid and regulation of air commerce, was the tremendous growth of private companies engaged in the industry. A limitation is made here to include only those companies in the operating field. Their activities consisted of the transportation of mail, of passengers, and of freight.

leader in so far as operating reliability and efficient performance were concerned.

While the United States Government was establishing air routes based on the transportation of mail, the governments of Europe were aiding in the creation of air routes based on passenger traffic. In Europe, government aid consisted of large subsidies to privately-operated companies. The purpose of this policy was two-fold; first, to build an air force for military purposes, and second, to keep up with the developments in aeronautics for commercial purposes. The development of passenger routes in Europe

brought the general public into direct contact with aviation. This policy did create the belief that European aviation was far ahead of that of the United States. In the establishment of airports and adequate equipment for passenger services, Europe did have the lead. The passenger airplane was also developed, both in size and interior equipment, far ahead of those used in the United States. At the close of 1923, the first year of contract mail operations in the United States, operating efficiency improved greatly and compared favorably with aviation activities abroad.

Growth of Private Companies

One of the many events, which occurred during the first years of governmental aid and regulation of air commerce, was the tremendous growth of private companies engaged in the industry. A limitation is made here to include only those companies in the operating field. Their activities consisted of the transportation of mail, of passengers, and of freight.

Private capital, as explained in Chapter I, was partly responsible for this growth. In the year 1928, a great reorganization of the industry occurred in which many of the old companies were merged into a few large companies backed by the largest banks and financiers in the United States. A great increase in air passenger traffic occurred in 1928 which caused the railroads to become interested in air travel. Arrangements were made whereby a combination of both means of transportation resulted in further increases of air passenger traffic. In order to encourage among the general public the continued use of this new mode of travel, many improvements in service were immediately developed. The new cabin passenger planes with improved equipment for the comfort of the passenger were being manufactured and used.

Many problems confronted these private companies during this period of expansion. The question of fare rates had to be solved in order to compete successfully against the older means of transportation. There were many advantages of air transportation over railroad transportation, but, in the majority of cases, the question of cost of air travel was the determining factor. Unless rates were lowered to a level attractive to a great number of persons, it would be impossible for these companies to operate successfully. The average fare rate on December 31, 1926, was twelve cents a mile.¹ This cost represented about twice the cost of railroad transportation. Considerable effort was made to reduce this fare. An experiment in 1929 in which several of the large companies lowered their rates to a level equal to the cost of first-class railroad travel, resulted in immediate response by the public with in-

¹United States Department of Commerce-Aeronautics Bulletin No. 1, Page 14.

Private capital, as explained in Chapter I, was partly responsible for this growth. In the year 1928, a great reorganization of the industry occurred in which many of the old companies were merged into a few large companies backed by the largest banks and financiers in the United States. A great increase in air passenger traffic occurred in 1928 which caused the railroads to become interested in air travel. Arrangements were made whereby a combination of both means of transportation resulted in further increases of air passenger traffic. In order to encourage among the general public the continued use of this new mode of travel, many improvements in services were immediately developed. The new cabin passenger planes with improved equipment for the comfort of the passenger were being manufactured and used. Many problems confronted these private companies during this period of expansion. The question of fare rates had to be solved in order to compete successfully against the older means of transportation. There were many advantages of air transportation over railroad transportation, but, in the majority of cases, the question of cost of air travel was the determining factor. Unless rates were lowered to a level attractive to a great number of persons, it would be impossible for these companies to operate successfully. The average fare rate on December 31, 1928, was twelve cents a mile. This cost represented about twice the cost of railroad transportation. Considerable effort was made to reduce this fare. An experiment in 1929 in which several of the large companies lowered their rates to a level equal to the cost of first-class railroad travel, resulted in immediate response by the public with in-

creased patronage. Further efforts were made during the following years to maintain rates on a par with railroad rates. On December 31, 1933, the average passenger rate for American operated airlines was 6.1 cents per mile.¹

The establishment of regular scheduled trips proved an added convenience to the traveling public. The air passenger transportation operators have continued to increase the number of passengers carried each year.

From 1926 to 1930, air transport companies devoted their greatest efforts toward building up the air mail and passenger service. There was, however, some activity in the transportation of small packages. Agreements between the railway express agency or messenger service and the air express companies resulted in a small amount of freight being handled.

There is, of course, one feature of air express, that has caused considerable growth of this type of service, and that is, the speed in which delivery of merchandise can be made. Where quick delivery is more important than the cost of transportation, the air express is the logical carrier. A more complete description of this type of service is given in Chapter 4.

Although the trend of aviation at the present time is the development of services involving the transportation of mail, passengers, and merchandise by large aviation companies, there remains for consideration the many other services rendered by the art. Some of these services are: aerial advertising, exhibition flying, aerial mapping, aerial photo-

¹. United States Department of Commerce-Aeronautics Bulletin #1, page. 15.

overland passenger. Further efforts were made during the following years to maintain rates on a par with railroad rates. On December 31, 1933, the average passenger rate for airlines operated airlines was 6.1 cents per mile.

The establishment of regular scheduled trips proved an added convenience to the traveling public. The air passenger transportation operators have continued to increase the number of passengers carried each year.

From 1926 to 1930, air transport companies devoted their greatest efforts toward building up the air mail and passenger service. There was, however, some activity in the transportation of small packages. Agreements between the railway express agency or messenger service and the air express companies resulted in a small amount of freight being handled. There is, of course, one feature of air express that has caused considerable growth of this type of service, and that is, the speed in which delivery of merchandise can be made. Where quick delivery is more important than the cost of transportation, the air express is the logical carrier. A more complete description of this type of service is given in

Chapter 4.

Although the trend of aviation at the present time is the development of services involving the transportation of mail, passengers, and merchandise by large aviation companies, there remains for consideration the many other services rendered by the art. Some of these services are: aerial advertising, exhibition flying, aerial mapping, aerial photography.

graphy, insecticide distributing, timber surveys, forest fire patrol, flying instruction, personal flying, taxi and charter service, and many others. These miscellaneous flying activities on the part of civilians and, in many cases, organized companies, account for the greater part of the civil flying in the United States. The great public interest developed in 1927 by spectacular trans-atlantic flights created an army of student pilots. The establishment of aviation schools followed in which flight instruction was given. The advantages of the airplane in aerial photography and mapping resulted in the formation of companies providing this service. In advertising, some business concerns have purchased airplanes and equipped them especially for advertising purposes. Many other methods including sky-writing and aerial-signboards are used to advantage.

Public Becomes Air-minded

Improvements in Aircraft

The tremendous growth of aviation activities since 1926 has brought about a change of attitude on the part of the public, which definitely places the new industry in the class of a major industry. We no longer look upon it as an art which may become useful for future generations. We have only to examine statistics in order to prove the extent to which the public has adopted this new means of transportation. The activities referred to include spectacular flights, endurance records, aid of government, organization of private companies, operation of scheduled routes, in short, all those events which have served to keep aviation in the public eye. The

graphy, insecticide distribution, timber surveys, forest fire patrol, flying instruction, personal flying, land and charter service, and many others. These miscellaneous flying activities on the part of civilians and, in many cases, organized companies, account for the greater part of the civil flying in the United States. The great public interest developed in 1927 by spectacular trans-Atlantic flights created an army of student pilots. The establishment of aviation schools followed in which flight instruction was given. The advantages of the airplane in aerial photography and mapping resulted in the formation of companies providing this service. In advertising, some business concerns have purchased airplanes and equipped them especially for advertising purposes. Many other methods including sky-writing and aerial signposts are used to advantage.

Public Becomes Air-minded

Improvements in Aircraft

The tremendous growth of aviation activities since 1926 has brought about a change of attitude on the part of the public, which definitely places the new industry in the class of a major industry. We no longer look upon it as an art which may become useful for future generations. We have only to examine statistics in order to prove the extent to which the public has adopted this new means of transportation. The activities referred to include spectacular flights, endurance records, aid of government, organization of private companies, operation of scheduled routes, in short, all those events which have served to keep aviation in the public eye. The

effect of some of these events on aviation have been previously disclosed in this work. The growth of the industry has been brought about by the careful planning and development of the many phases of which it is composed. One of the more important developments concerns the airplane itself. The extent of this development and its result in increasing public air-mindedness will be referred to here.

In chapter I an explanation of what caused the first airplane to fly was given. In describing the cause of the flight of our modern cabin airplane we give, fundamentally, the same explanation. In a description of the two, however, there is a vast difference. Due to the exhaustion of war-time planes and equipment about the end of 1926, a great increase in the production of a new type of plane began. The cabin airplane appeared on the market to replace the military type plane. For commercial uses, this type of plane immediately won great favor. The designers incorporated features of comfort and luxury that made flying more attractive to the public. Some of these features included: larger space for pilot and passengers, comfortable chairs and interior furnishings, greater speed because of improved engine design. The use of better materials for the construction of both the interior and exterior parts of the plane has resulted in a stronger and sturdier plane. Wood and cloth have been displaced by metal in the construction of the framework of the plane. Some manufacturers have produced planes made entirely of metal.

Many improvements have been made which add considerably to the safety of flying. The use of wheel brakes on the larger planes reduces the take-off distance and the landing run. These brakes increase the pilot's control of the plane

effect of some of these events on aviation have been previously discussed in this work. The growth of the industry has been brought about by the careful planning and development of the many phases of which it is composed. One of the more important developments concerns the airplane itself. The extent of this development and its result in increasing public air-mindedness will be referred to here.

In chapter I an explanation of what caused the first airplane to fly was given. In describing the cause of the flight of our modern cabin airplane we give, fundamentally, the same explanation. In a description of the two, however, there is a vast difference. Due to the expansion of war-time planes and equipment about the end of 1935, a great increase in the production of a new type of plane began. The cabin airplane appeared on the market to replace the military type plane. For commercial uses, this type of plane immediately won great favor. The designers incorporated features of comfort and luxury that made flying more attractive to the public. Some of these features included: larger space for pilot and passengers, comfortable chairs and interior furnishings, greater speed because of improved engine design. The use of better materials for the construction of both the interior and exterior parts of the plane has resulted in a stronger and sturdier plane. Wood and cloth have been displaced by metal in the construction of the framework of the plane. Some manufacturers have produced planes made entirely of metal. Many improvements have been made which add considerably to the safety of flying. The use of wheel brakes on the largest planes reduces the take-off distance and the landing run. These brakes increase the pilot's control of the plane

while on the ground. Air brakes, consisting of hinged flaps on the trailing edges of wings, make take-offs and landings at slower speeds possible. Improvements in instruments and new types of instruments have increased safety in flying.⁽¹⁾ An important addition is one which shows whether the airplane is in level flight, banked, nosed-down, or climbing. Other instruments include the gyroscopic compass, various types of altimeters, for showing altitude above the ground, and the automatic pilot, which holds the plane in level flight on a predetermined course. The possible risk of fire has been greatly reduced by the utilization of fire walls and the elimination of air-pressure fuel-feed systems. Extensive study has been made by the Bureau of Air Commerce concerning the reduction of noise in the operation of a plane. Such improvements as the soundproofing of cabin walls, the muffling of the noise of the engine, and the reduction of propeller noise have increased the comfort of flying.

Aside from the mechanical improvements of the airplane, there have been other factors which have caused the public to become air-minded. The close cooperation of scheduled air-transport operators with the Bureau of Commerce and its regulations regarding the operation, equipment, maintenance, and personnel have resulted in making flying a safer method of travel. Statistics show a marked decrease in the accident rate for scheduled air transportation. The private operators have stressed speed in their appeal for patronage, knowing that a desire to save time is inherent in the American temperament. By means of improved engines and aircraft, they have definitely proven this advantage to the public. They have not neglected,

(1) U.S. Department of Commerce-Civil Aeronautics in the United States, Bulletin #1, Page 26.

while on the ground. Air brakes, consisting of delayed flaps on the trailing edges of wings, make take-offs and landings at slower speeds possible. Improvements in instruments and new types of instruments have increased safety in flying. An important addition is one which shows whether the airplane is in level flight, banked, nosed-down, or climbing. Other instruments include the gyroscopic compass, various types of altimeters, for showing altitudes above the ground, and the automatic pilot, which holds the plane in level flight on a predetermined course. The possible risk of life has been greatly reduced by the utilization of fire walls and the elimination of air-pressure fuel-feed systems. Extensive study has been made by the Bureau of Air Commerce concerning the reduction of noise in the operation of a plane. Such improvements as the soundproofing of cabin walls, the muffling of the noise of the engine, and the reduction of propeller noise have increased the comfort of flying.

Aside from the mechanical improvements of the airplane, there have been other factors which have caused the public to become air-minded. The close cooperation of scheduled air-transport operators with the Bureau of Commerce and its regulations regarding the operation, equipment, maintenance, and personnel have resulted in making flying a safer method of travel. Statistics show a marked decrease in the accident rate for scheduled air transportation. The private operators have stressed speed in their appeal for patronage, knowing that a desire to save time is inherent in the American temperament. By means of improved engines and aircraft, they have definitely proven this advantage to the public. They have not neglected

(U.S. Department of Commerce-Civil Aeronautics Administration) Bureau of Air Commerce, Bulletin 41, Page 22.

however, to include the other primary requisites of air travel, **safety and comfort**, in their successful development of public air-mindedness.

However, to include the other primary necessities of air travel,
safety and comfort, in their successful development of public
air-mindedness.

CHAPTER III

Government Aid to Commercial Aviation

The Federal Airways System

The great majority of the American people realize the extent to which the aviation industry has grown in the past eight years. They are also aware of the fact that the Government, through the operations of the Bureau of Air Commerce, has taken an active part in this development. It is our purpose here to disclose in greater detail the many services now being rendered by the Government in fostering air commerce.

Under the Air Commerce Act, the Department of Commerce was authorized to establish a system of airways and equip them with the necessary aids to navigation in order to encourage and develop air commerce. These airways are available to anyone who wishes to make a flight. In order to show how this federal airways system functions,⁽¹⁾ we shall take an imaginary flight. It shall be a night flight, because at night we receive the full benefit of all the aids to navigation rendered by the system.

We have arrived at the airport and our first thought concerns the weather conditions prevailing along the route we contemplate flying. In the Administration Building, the operator-in-charge of the Department of Commerce communication station informs us that good weather prevails along our airway. He obtains this information by means of reports received hourly over a teletypewriter from stations located along the airway. Additional information concerning weather conditions are furnished him every four hours by the United

(1)U.S. Dep't. of Commerce-Airway Bulletin #1, Page 6.

Government aid to commercial aviation

The Federal Airways System

The great majority of the American people realize the extent to which the aviation industry has grown in the past eight years. They are also aware of the fact that the Government, through the operations of the Bureau of Air Commerce, has taken an active part in this development. It is our purpose here to discuss in greater detail the many services now being rendered by the Government in fostering air commerce.

Under the Air Commerce Act, the Department of Commerce was authorized to establish a system of airways and equip them with the necessary aids to navigation in order to encourage and develop air commerce. These airways are available to anyone who wishes to make a flight. In order to show how this Federal Airways System functions, we shall take an imaginary flight. It shall be a night flight, because at night we receive the full benefit of all the aids to navigation rendered by the system.

We have arrived at the airport and our first thought concerns the weather conditions prevailing along the route we contemplate flying. In the Administration Building, the operator-in-charge of the Department of Commerce communication station informs us that good weather prevails along our airway. He obtains this information by means of reports received hourly over a radio-telephone from stations located along the airway. Additional information concerning weather conditions are furnished him every four hours by the United States Dept. of Commerce-Airway Building, Room 8.

States Weather Bureau. Our pilot is ready, and we take off, eager to experience the thrill of night flying and to observe the operation of this system. As we are leaving the airport, a code message goes out over a teletypewriter circuit, operated by the Bureau of Commerce, briefly describing our departure, giving our license number, the name of the pilot, the time of departure, the name of the airport, and our destination. This message is automatically reproduced on receiving machines at strategic points along our route. The purpose of this operation, known as position reporting, is to enable all points along the airway to check the position and progress of our plane.

In the air, we have now established our desired altitude and course for the flight. As we look ahead, we see in the distance a flash of light. Our pilot recognizes it as a Department of Commerce beacon light. It is distinguished from other lights because it comes from a revolving searchlight flashing six times per minute. We see another light coming from approximately the same place. This is a course light which throws a beam in the direction of the airway. It is usually red, although, if located near the landing fields, it is green. The first beacon is fifteen miles from the airport which we have just left. The pilot informs us that we shall see other flashing beacons approximately fifteen miles apart and in the direct line of our course. We continue on our way passing the first beacon light and looking ahead for the second light. Our pilot informs us that we are not entirely dependent on beacon lights to guide us for the airplane is radio equipped and by tuning in on the radio range beacon we hear a long

Status Weather Bureau. Our pilot is ready, and we take off, eager to experience the thrill of night flying and to observe the operation of this system. As we are leaving the airport, a code message goes out over a teletypewriter circuit, operated by the Bureau of Commerce, briefly describing our departure, giving our license number, the name of the pilot, the time of departure, the name of the airport, and our destination. This message is automatically responded on receiving machines at strategic points along our route. The purpose of this operation, known as position reporting, is to enable all points along the airway to check the position and progress of our plane.

In the air, we have now established our desired altitude and course for the flight. As we look ahead, we see in the distance a flash of light. Our pilot recognizes it as a Department of Commerce beacon light. It is distinguished from other lights because it comes from a revolving searchlight flashing six times per minute. We see another light coming from approximately the same place. This is a course light which throws a beam in the direction of the airway. It is usually red, although, if located near the landing field, it is green. The first beacon is fifteen miles from the airport which we have just left. The pilot informs us that we shall see other flashing beacons approximately fifteen miles apart and in the direct line of our course. We continue on our way passing the first beacon light and looking ahead for the second light. Our pilot informs us that we are not entirely dependent on beacon lights to guide us for the airplane is radio equipped and by tuning in on the radio range beacon we have a long

drawn-out hum. The hum stops, and we hear a code signal given twice in rapid succession. The hum signifies the "on-course" signal; the code signal designates the radio range beacon given out by the station from which we departed. If we were to stray off to one side of our course, the hum would gradually give way to a set of dot dash signals. If we were to stray off to the other side, the hum would gradually change to a set of dash dot signals. The purpose of these signals is to guide the pilot on his true course in case he is unable to see the beacon lights because of weather conditions.

Assume, now, that we have passed several beacon lights. We are about to experience the operation of another aid to air navigation as provided by the Bureau of Air Commerce. We now see in the distance one of the green course lights, previously referred to, which light informs the pilot that at this particular beacon there is an intermediate landing field. As we approach it we notice that there is an area of ground marked off by a succession of boundary lights, three hundred feet apart. This area is leased and maintained by the Bureau of Air Commerce for the use of all planes flying the airways if, for any reason, they desire to make landings between terminals. This intermediate landing field is equipped with a radio marker beacon which can broadcast radio range signals for about twenty-five miles. It is also possible to set up a two-way communication with airplanes. Our pilot is now talking to the keeper of this field. The keeper informs him that weather conditions along our route are still favorable, and we continue on to our destination. We land at the airport, where attendants have been watching for the arrival of our plane.

drawn-out hum. The hum stops, and we hear a code signal given twice in rapid succession. The hum signifies the on-course signal; the code signal designates the radio range beacon given out by the station from which we departed. If we were to stray off to one side of our course, the hum would gradually give way to a set of dot dash signals. If we were to stray off to the other side, the hum would gradually change to a set of dash dot signals. The purpose of these signals is to guide the pilot on his true course in case he is unable to see the beacon lights because of weather conditions.

Assume, now, that we have passed several beacon lights. We are about to experience the operation of another aid to air navigation as provided by the Bureau of Air Commerce. We now see in the distance one of the green course lights, previously referred to, which light informs the pilot that at this particular beacon there is an intermediate landing field. As we approach it we notice that there is an area of ground marked off by a succession of boundary lights, three hundred feet apart. This area is leased and maintained by the Bureau of Air Commerce for the use of all planes flying the airways it, for any reason, they desire to make landings between terminals. This intermediate landing field is equipped with a radio marker beacon which can broadcast radio range signals for about twenty-five miles. It is also possible to set up a two-way communication with airplanes. Our pilot is now talking to the keeper of this field. The keeper informs him that weather conditions along our route are still favorable, and we continue on to our destination. We land at the airport, where attendants have been watching for the arrival of our plane.

It is important to note here that from the time of our departure the progress of our flight was being recorded by means of the teletypewriter at the communication station at the point of destination.

The development of municipal airports by cities throughout the United States has been greatly aided by the Bureau of Air Commerce. In its Air Navigation Division, there are experts ready to give advice on the many engineering problems concerning airport development. No two cities present the same set of conditions. For example, the area of land available for airport facilities differs in each case. How to use this available land to the best advantage is one of the problems confronting cities. The design and construction of airport landing area surfaces present problems of drainage and surfacing. The size of the airport should be determined only after a complete study of all existing conditions in an individual case. Airports should be developed not only to meet present economic conditions, but also to afford future expansion. There are many other problems connected with airport development which can best be solved only through consultation with men who have made a special study of such problems. The aid given by the Air Navigation Division to cities engaged in airport development has resulted in better airport facilities throughout the country. Airports are rated by the Bureau of Air Commerce upon the request of the owner.⁽¹⁾ There is no obligation for the airport to apply for a rating, but if it does have the approval of the government, it is a guarantee to the flying public that certain equipment and facilities are provided.

(1) U.S. Dep't. of Commerce-Airway Bulletin #1, Page 67.

It is important to note here that from the time of our departure the progress of our flight was being recorded by means of the teletypewriter at the communication station at the point of destination.

The development of municipal airports by cities throughout the United States has been greatly aided by the Bureau of Air Commerce. In its Air Navigation Division, there are experts ready to give advice on the many engineering problems concerning airport development. No two cities present the same set of conditions. For example, the area of land available for airport facilities differs in each case. How to use this available land to the best advantage is one of the problems confronting cities. The design and construction of airport landing areas involves present problems of drainage and surfacing. The size of the airport should be determined only after a complete study of all existing conditions in an individual case. Airports should be developed not only to meet present economic conditions, but also to afford future expansion. There are many other problems connected with airport development which can best be solved only through consultation with men who have made a special study of such problems. The aid given by the Air Navigation Division to cities engaged in airport development has resulted in better airport facilities throughout the country. Airports are leased by the Bureau of Air Commerce upon the request of the owner. There is no obligation for the airport to apply for a rating, but if it does have the approval of the government, it is a guarantee to the flying public that certain equipment and facilities are provided.

(2) U.S. Dept. of Commerce-Airway Division, Page 67.

Another aid to air navigation rendered by the Air Navigation Division is the charting of airways and the publication of air navigation maps. The maps are compiled and printed by the Coast and Geodetic Survey of the Department of Commerce. The preparation of sectional airway maps covering the entire United States is in progress at the time of this writing. When these maps are completed, no territory in the country need be flown by a pilot without a map designed especially for air navigation. These maps will serve the airman by giving him information concerning location of cities and other geographical features. They will also designate all airports, beacon lights, and radio stations within the various sections.

The Secretary of Commerce, by authority of the provisions of the Air Commerce Act, is empowered to make regulations in order to execute the functions vested in him by the Act. As a further aid rendered by the Bureau of Air Commerce to civil aeronautics, certain regulations concerning licenses for airmen, and aircraft have been enacted and are enforced by the Air Regulation Division of the Bureau. Licenses for airmen are of four classes: amateur, private, limited commercial, and transport. Candidates for pilot licenses first undergo a thorough physical examination by one of the seven hundred medical examiners designated by the Bureau to examine candidates. These examiners maintain their own private practice of medicine and receive only the fee for their services from the candidate. If the candidate passes the examination, the doctor issues a student pilot license to him. The candidate is thereby authorized to receive flight instructions. While obtaining this flight instruction he also is studying the Air Commerce Regulations and Air Traffic Rules. After he has completed twenty-

Another aid to air navigation rendered by the Air Navigation Division is the charting of airways and the publication of air navigation maps. These maps are compiled and printed by the Coast and Geodetic Survey of the Department of Commerce. The preparation of sectional airway maps covering the entire United States is in progress at the time of this writing. When these maps are completed, no territory in the country need be flown by a pilot without a map designed especially for air navigation. These maps will serve the aviator by giving him information concerning location of cities and other geographical features. They will also designate all airports, beacon lights, and radio stations within the various sections.

The Secretary of Commerce, by authority of the provisions of the Air Commerce Act, is empowered to make regulations in order to execute the functions vested in him by the Act. As a further aid rendered by the Bureau of Air Commerce to civil aeronautics, certain regulations concerning licenses for aviators, and aircraft have been enacted and are enforced by the Air Regulation Division of the Bureau. Licenses for aviators are of four classes: amateur, private, limited commercial, and transport. Candidates for pilot licenses first undergo a thorough physical examination by one of the seven hundred medical examiners designated by the Bureau to examine candidates. These examiners maintain their own private practice of medicine and receive only the fee for their services from the candidate. If the candidate passes the examination, the doctor issues a student pilot license to him. The candidate is thereby authorized to receive flight instructions. While obtaining this flight instruction he also is studying the Air Commerce regulations and Air Traffic Rules. After he has completed twenty-

five hours of solo flying, he is eligible to apply for an amateur license. A written examination on the regulations and a demonstration of his flying ability is next given him by a Bureau of Commerce inspector. If successful in all tests, he is granted an amateur license. He may then acquire additional solo flying experience and apply for the private license. In each step towards the granting of a transport license, the requirements as to flying skill and knowledge are increased. A candidate for a transport license must be physically qualified; he must have completed two-hundred hours of solo flying; he must have a complete knowledge of the Air Commerce Regulations, elementary engine and plane mechanics and plane rigging, the fundamentals of meteorology and air navigation. Pilots granted transport licenses are eligible to become airline pilots. In order to qualify for the position of pilot in command of a passenger airliner traveling interstate, the pilot must have completed twelve hundred hours of solo flying in the eight years preceding the date of application. Of these hours, five hundred must consist of cross-country flying and seventy-five hours of night flying. Further requisites include: a high grade of proficiency in the use of radio and other aids to air navigation, an understanding of weather analysis and forecasting, a demonstration of the ability to operate through or over clouds. Rigid adherence to these regulations by the inspectors of the Bureau of Air Commerce has resulted in a competent and experienced personnel for aircraft operators.

In order to promote safety in the operation of aircraft, the Bureau of Air Commerce has enacted definite regulations for the issuance of licenses for aircraft.⁽¹⁾ In order to

(1) United States Department of Commerce-Civil Aeronautics in the United States, Page 43.

live hours of solo flying. he is eligible to apply for an amateur license. A written examination on the regulations and a demonstration of his flying ability is next given him by a Bureau of Commerce inspector. If successful in all tests, he is granted an amateur license. He may then acquire additional solo flying experience and apply for the private license. In each step towards the granting of a transport license, the requirements as to flying skill and knowledge are increased. A candidate for a transport license must be physically qualified; he must have completed two-hundred hours of solo flying; he must have a complete knowledge of the Air Commerce Regulations, elementary engine and plane mechanics and plane flying, the fundamentals of meteorology and air navigation. Pilots granted transport licenses are eligible to become airline pilots. In order to qualify for the position of pilot in command of a passenger airplane traveling interstate, the pilot must have completed twelve hundred hours of solo flying in the eight years preceding the date of application. Of these hours, five hundred must consist of cross-country flying and seventy-five hours of night flying. Further regulations include: a high grade of proficiency in the use of radio and other aids to air navigation; an understanding of weather analysis and forecasting, a demonstration of the ability to operate through or over clouds. Rigid adherence to these regulations by the inspectors of the Bureau of Air Commerce has resulted in a competent and experienced personnel for aircraft operators. In order to promote safety in the operation of aircraft, the Bureau of Air Commerce has enacted definite regulations for the issuance of licenses for aircraft. In order to (1) United States Department of Commerce-Bureau of Aeronautics in the United States, Page 43.

secure the approval of the Bureau, aircraft must be examined and tested for airworthiness. In the case of a manufacturer of airplanes, there are two kinds of production. The manufacturer may build a certain type of aircraft in large quantities for which he obtains an approved type certificate. The other kind of production consists of a limited number of aircraft, for which an approved type of certificate is not desired. Both types of production have to comply with the same airworthiness requirements, but the method of inspection differs. In the first case, the factory is carefully inspected to ascertain whether large quantity production is possible. In the second case, a rigid inspection of each aircraft built is conducted by the inspectors. In order to obtain the approved type certificate referred to above, the manufacturer must submit complete data relative to construction to the engineering section of the Bureau. Experts on aircraft analysis and design inspect the data in order to make sure that the design of the structure possesses the required strength and meets with all other engineering standards. A standard machine is then presented by the manufacturer for inspection. After the approval of the plans of production, the facilities of the factory, and the standard machine itself, this type of plane is henceforth granted a license. Periodic inspection continues, however, to see that the standards of construction are being adhered to by the manufacturer. The Air Commerce Regulations goes a step further in its efforts to establish safety in flying. After the license has been issued, periodic inspection of the aircraft is made in order to maintain it in good flying condition. This inspection service, although

secure the approval of the Bureau, aircraft must be examined and tested for airworthiness. In the case of a manufacturer of airplanes, there are two kinds of production. The manufacturer may build a certain type of aircraft in large quantities for which he obtains an approved type certificate. The other kind of production consists of a limited number of aircraft, for which an approved type of certificate is not desired. Both types of production have to comply with the same airworthiness requirements, but the method of inspection differs. In the first case, the factory is carefully inspected to ascertain whether large quantity production is possible. In the second case, a rigid inspection of such aircraft built is conducted by the inspectors. In order to obtain the approved type certificate referred to above, the manufacturer must submit complete data relative to construction to the engineering section of the Bureau. Experts on aircraft analysis and design inspect the data in order to make sure that the design of the structure possesses the required strength and meets with all other engineering standards. A standard machine is then presented by the manufacturer for inspection. After the approval of the plans of production, the facilities of the factory, and the standard machine itself, this type of plane is henceforth granted a license. Periodic inspection continues, however, to see that the standards of construction are being adhered to by the manufacturer. The Air Commerce Regulation goes a step further in its efforts to establish safety in flying. After the license has been issued, periodic inspection of the aircraft is made in order to maintain it in good flying condition. This inspection service, although

only briefly mentioned here, is another important service rendered by the Bureau of Air Commerce.⁽¹⁾ The work involves the checking of every important part of the aircraft.

All licensed pilots are required to report all accidents to the Bureau of Air Commerce. One of the purposes of the Air Commerce Act, is to promote safety in flight. To this end, the Bureau of Air Commerce has established an Accident Board in Washington for the purpose of studying and analyzing accidents in the operation of aircraft. The membership of the Board includes two pilots, a flight surgeon, an aeronautical engineer, a lawyer versed in air law, and a statistician. It is the duty of the Board to determine the cause of accidents and to fix the responsibility for them. There are various causes for accidents in the operation of aircraft. A general classification would include the following: a structural weakness of the aircraft, incompetency in piloting, violations of Air Commerce Regulations. Immediate suspension of licenses of damaged aircraft, where the damage seriously affects the safe operation of the plane, increases safety of flight. Another value attached to a study of accidents is the fact that a constant development of safer aircraft follows. Errors of judgment in piloting are brought to the attention of pilots resulting in more competent pilots. In many cases, accidents serve to show the need of further regulation of aircraft in the interests of safety.

In order to carry out the various regulations outlined in this chapter, the Bureau of Air Commerce has an organized inspection service. Inspectors are divided into two general classes. The first class includes men who are

⁽¹⁾U.S. Dep't. of Commerce-Civil Aeronautics in U.S., Page 45.

only briefly mentioned here, in another important report re-
lated by the Bureau of Air Commerce. The work involves the
checking of every important part of the aircraft.
All licensed pilots are required to report all acci-
dents to the Bureau of Air Commerce. One of the purposes of
the Air Commerce Act, is to promote safety in flight. To this
end, the Bureau of Air Commerce has established an Accident
Board in Washington for the purpose of studying and analyzing
accidents in the operation of aircraft. The members of the
Board include two pilots, a flight surgeon, an aeronautical
engineer, a lawyer versed in air law, and a statistician. It
is the duty of the Board to determine the cause of accidents
and to fix the responsibility for them. There are various
causes for accidents in the operation of aircraft. A general
classification would include the following: a structural weak-
ness of the aircraft, incompetency in piloting, violations of
Air Commerce Regulations. Instances mentioned of licensees of
damaged aircraft, where the damage seriously affects the safe
operation of the plane, increases safety of flight. Proper
value attached to a study of accidents is the fact that a con-
stant development of safer aircraft follows. Errors of judgment
in piloting are brought to the attention of pilots resulting in
more competent pilots. In many cases, accidents serve to show
the need of further regulation of aircraft in the interest of
safety.

In order to carry out the various regulations out-
lined in this chapter, the Bureau of Air Commerce has an
organized inspection service. Inspectors are divided into
two general classes. The first class includes men who are
U.S. Rep's. of Commerce-Civil Aeronautics Act, Part 43.

expert pilots and who have a thorough knowledge of airplanes and airplane construction. In addition to these qualifications, they usually possess sufficient tact and diplomacy to carry out their duties of examining pilots and mechanics and also the inspection of aircraft in the field. The second class are men who inspect the construction of aircraft in the factory. They have a thorough knowledge of the details of construction and do not necessarily have to be pilots. The entire service operates from headquarters offices located in the following cities: New York City, Los Angeles, Atlanta, Detroit, Chicago, Kansas City, Dallas, and Oakland. In addition to the inspection of pilots and aircraft, there are other activities which, by regulation, have to be supervised. Aeronautical schools are inspected for equipment and facilities in order to determine their eligibility for approved school certificates. Interstate passenger air lines are inspected for equipment and facilities.

In accordance with the provisions of the Air Commerce Act, the Secretary of Commerce is authorized to promote air commerce through the publication of information concerning aeronautics. A special section of the Bureau of Air Commerce, not attached to either of the principal divisions, but responsible to the Director of the Bureau, has been created for this particular service. The name of this section is the Aeronautic Information Section. The scope of its activities is as follows:

(1) The publication and dissemination of current information relating to civil aeronautics through the monthly periodical, "Air Commerce Bulletin;"

The publication of airway bulletins describing airports, Department of Commerce intermediate landing fields, airways,

(1) U.S. Department of Commerce, Aeronautics Bulletin #1, Page 48.

expert pilots and who have a thorough knowledge of airplane and airplane construction. In addition to these qualifications they usually possess sufficient land and seafaring to carry out duties of examining pilots and mechanics and also the inspection of aircraft in the field. The second class are men who have the construction of aircraft in the factory. They have a thorough knowledge of the details of construction and do not necessarily have to be pilots. The entire service operates from headquarters offices located in the following cities: New York City, Los Angeles, Atlanta, Detroit, Chicago, Kansas City, Dallas and Oakland. In addition to the inspection of pilots and aircraft, there are other activities which, by regulation, have to be supervised. Aeronautical schools are inspected for equipment and facilities in order to determine their eligibility for approved school certificates. Interstate passenger air lines are inspected for equipment and facilities.

In accordance with the provisions of the Air Commerce Act, the Secretary of Commerce is authorized to promote air commerce through the publication of information concerning aeronautics. A special section of the Bureau of Air Commerce, not attached to either of the principal divisions, but responsive to the Director of the Bureau, has been created for this particular service. The name of this section is the Aeronautics Information Section. The scope of its activities is as follows: (1) The publication and dissemination of current information relating to civil aeronautics through the monthly periodical, "Air Commerce Bulletin."

The publication of advisory bulletins describing airports, the payment of Commerce Intermediate Landing Fields, airports.

air markings, meteorological conditions, and other data essential to air navigation;

The preparation and editing of non-periodic publications known as "Aeronautics Bulletins," which are issued from time to time on specific phases of civil aeronautics of both a technical and non-technical character;

The preparation and dissemination of information for the aeronautic trade journals, and newspapers maintaining special aeronautic columns, departments, or sections;

The compilation and publication of statistics covering accidents to civil aircraft and other statistics on the manufacture and operation of civil aircraft; and

The general promotional work of the Department of Commerce encouraging the development of civil aeronautics in the United States.

The policy of the United States in providing these many aids to navigation and regulations of air commerce is solely for the purpose of furthering the development of the industry. In reviewing the policies of foreign countries toward aviation, we see (1) a heavily subsidized growth of air commerce developed principally for national defense purposes, and (2) a development for the convenience of commerce. Regardless of what the policy of this country might be, there is a distinct relationship between the development of air transport and national defense. The aids given to air commerce by the United States have resulted in the establishment of improved facilities useful in times of emergency. The air commerce regulations regarding the licensing of pilots have also resulted in a competent personnel, a very important factor

air markings, meteorological conditions, and other data essential to air navigation;

The preparation and editing of non-periodic publications known as "Aeronautical Bulletins," which are issued from time to time on specific phases of civil aeronautics of both a technical and non-technical character;

The preparation and dissemination of information for the aeronautic trade journals, and newspapers maintaining special aeronautic columns, departments, or sections;

The compilation and publication of statistics covering accidents to civil aircraft and other statistics on the manufacture and operation of civil aircraft; and

The general promotional work of the Department of Commerce encouraging the development of civil aeronautics in the United States.

The policy of the United States in providing these many aids to navigation and regulations of air commerce is solely for the purpose of furthering the development of the industry. In reviewing the policies of foreign countries toward aviation, we see (1) a heavily subsidized growth of air commerce developed principally for national defense purposes, and (2) a development for the convenience of commerce. Regardless of what the policy of this country might be, there is a distinct relationship between the development of air transport and national defense. The aids given to air commerce by the United States have resulted in the establishment of improved facilities useful in times of emergency. The air commerce regulations regarding the licensing of pilots have also resulted in a competent personnel, a very important factor

when we consider the subject of national defense. The establishment of the Federal Airways System with all its aids to air navigation can be made readily available to any military needs that might eventuate. The rapid expansion of aircraft factories, manned by expert workers, designers, and engineers, presents potential wartime production plants. In addition, the achievements of private enterprise in the development of new type engines and aircraft equipment for the purpose of supplying the demands of an increasing commercial air transport can certainly be included as aids to national defense. The expansion of commercial air transport on an international basis serves to increase the knowledge of flying conditions in other parts of the world. It is possible that this experience would prove valuable for the purpose of national defense.

The policy of the United States, in regard to the development of public transportation systems, has always been one of aid and support. The reason for such support is based on the sound theory that a public good demanded further development. The aviation industry has definitely proven its right to a place in the transportation system of the country. It provides the fastest means of transportation to the American people, and therefore, they are willing, through the expenditure of public funds to aid in its development. A review of the development of our older means of transportation, the railroad, serves to recall to our minds, that they were supported by this same policy. Grants of land for development purposes, together with capital contributed through bond issues that are still outstanding, indicates the extent of public support given the railroads in their early development. Government aid to water

when we consider the subject of national defense. The establishment of the Federal Airways System with all its aids to air navigation can be made readily available to any military needs that might be eventuate. The rapid expansion of aircraft factories, manned by expert workers, designers, and engineers, presents potential wartime production plants. In addition, the achievements of private enterprise in the development of new type engines and aircraft equipment for the purpose of supplying the demands of an increasing commercial air transport can certainly be included as aids to national defense. The expansion of commercial air transport on an international basis serves to increase the knowledge of flying conditions in other parts of the world. It is possible that this experience would prove valuable for the purpose of national defense.

The policy of the United States, in regard to the development of public transportation systems, has always been one of aid and support. The reason for such support is based on the sound theory that a public good demanded further development. The aviation industry has definitely proven its right to a place in the transportation system of the country. It provides the fastest means of transportation to the American people, and therefore, they are willing, through the expenditure of public funds to aid in its development. A review of the development of our older means of transportation, the railroad, serves to recall to our minds, that they were supported by this same policy. Grants of land for development purposes, together with capital contributed through bond issues that are still outstanding, indicates the extent of public support given the railroads in their early development. Government aid to water

transportation is also common knowledge. The development by the Government of waterways, harbors, and aid in water navigation, has brought about increased marine transportation for the benefit of the general public. The support of air transportation is based on the same policies as outlined for the railroads and water transportation. The tremendous task of establishing the industry on a sound basis in order to serve the public efficiently and economically calls for government support.

In the summer of 1934, President Roosevelt appointed a commission to make a study of the conditions and problems in the aviation industry. This body known as the Federal Aviation Commission, has recently completed its work, and its report has been submitted to the Congress of the United States, by the President for consideration. The text of President Roosevelt's aviation message to Congress on his study of this board's finding is herewith subjoined.

transportation is also common knowledge. The development by the Government of waterways, harbors, and air in water navigation, has brought about increased marine transportation for the benefit of the general public. The support of air transportation is based on the same policies as outlined for the railroads and water transportation. The tremendous task of establishing the industry on a sound basis in order to serve the public efficiently and economically calls for Government support.

In the summer of 1934, President Roosevelt appointed a commission to make a study of the conditions and problems in the aviation industry. This body known as the Federal Aviation Commission, has recently completed its work, and its report has been submitted to the Congress of the United States, by the President for consideration. The text of President Roosevelt's aviation message to Congress on his study of this board's findings is herewith submitted.

"To the Congress of the United States:"

"I am submitting herewith the report of the Federal Aviation Commission appointed by me last Summer by direction of the 73d Congress. The commission has made a diligent study of the broad subject of aviation conditions here and elsewhere and emphasizes the excellent American progress in this new form of transportation. The commission also has studied problems of national defense, of procurement policies and of the extension of air transport services. I invite your attention to these comprehensive surveys.

" As I have suggested on many occasions, it becomes more and more apparent that the Government of the United States should bring about a consolidation of its methods of supervision over all forms of transportation. When the Interstate Commerce Commission was created in 1887 the railroad was practically the principal method of rapid interstate transportation.

Competition in Transportation

"Since that time this monopoly of transportation enjoyed by the railroad, to a very important degree, has been limited by the development of the automobile and good interstate roads.

"Recently water transportation by lake, by river, by canal and by oceans has, largely through the construction of the Panama Canal and our inland waterways, definitely brought ships and shipping into the general interstate field. More recently still, air transportation has become an element.

"All of these developments have changed the general problem of transportation and the concern of the Government with

"To the Congress of the United States."

"I am submitting herewith the report of the Federal

Aviation Commission appointed by me last summer by direction of the 73d Congress. The commission has made a diligent study of the broad subject of aviation conditions here and elsewhere and emphasizes the excellent American progress in this new

form of transportation. The commission also has studied problems of national defense, of procurement policies and of the extension of air transport services. I invite your attention to these comprehensive surveys.

"As I have suggested on many occasions, it becomes more and more apparent that the Government of the United States should bring about a consolidation of its methods of supervision over all forms of transportation. When the Interstate Commerce Commission was created in 1887 the railroad was practically the principal method of rapid interstate transportation.

Competition in Transportation

"Since that time this monopoly of transportation enjoyed by the railroad, to a very important degree, has been limited by the development of the automobile and good interstate roads.

"Recently water transportation by lake, by river, by canal and by ocean has, largely through the construction of the Panama Canal and our inland waterways, definitely brought ships and shipping into the general interstate field. More recently still, air transportation has become an element.

"All of these developments have changed the general problem of transportation and the concern of the Government with

them. A number of valuable reports have been prepared on these related questions. The report of the Federal Coordinator of Transportation has already been submitted to the Congress by the Interstate Commerce Commission. The report deals with the many problems relating to buses, trucks, water carriers and railroads.

For "Interrelated Planning"

"Other reports of departmental committees on ocean mail subsidies have been completed. This present report on aviation is a similar source of information and advice concerning transportation by air. I earnestly suggest that the Congress consider these various reports together in the light of the necessity for the development of interrelated planning of our national transportation.

"At a later date I shall ask the Congress for general legislation centralizing the supervision of air and water and highway transportation with adjustments of our present methods of organization in order to meet new and additional responsibilities.

"There are detailed questions, however, that require early action. Our extended mail contracts with air lines expire on or about March 1st and existing legislation dealing with primary and secondary routes should be revised before that time.

"The Commission suggests that the Interstate Commerce Commission be given temporarily the power to lower or increase air mail rates, as warranted in their judgment after full investigation. The purpose of this is to prevent the destruction of any efficiently operated part of the present system pending suitable consideration by the Congress of what permanent

them. A number of valuable reports have been prepared on these related questions. The report of the Federal Coordinator of Transportation has already been submitted to the Congress by the Interstate Commerce Commission. The report deals with the many problems relating to buses, trucks, water carriers and railroads.

for "interrelated planning."

"Other reports of departmental committees on ocean

and air mail subsidies have been completed. This present report on aviation is a similar source of information and advice concerning transportation by air. I earnestly suggest that the Congress consider these various reports together in the light of the necessity for the development of interrelated planning of our national transportation.

"At a later date I shall ask the Congress for general

legislation centralizing the supervision of air and water and highway transportation with adjustments of our present methods of organization in order to meet new and additional responsibilities.

"There are detailed questions, however, that require

early action. Our expanded mail contracts with air lines expire on or about March 1st and existing legislation dealing with primary and secondary routes should be revised before that time.

"The Commission suggests that the Interstate Commerce

Commission be given temporarily the power to lower or increase air mail rates, as warranted in their judgment after full investigation. The purpose of this is to prevent the destruction of any efficiently operated part of the present system pending suitable consideration by the Congress of what permanent

measures should be taken and what amendment, if any, the present general transportation policy of the Government should undergo.

Government Aid Only to Save

"I concur in this recommendation of the Federal Aviation Commission, provided always that the grant of this duty to the Interstate Commerce Commission be subject to provisions against unreasonable profits by any private carrier. On account of the fact that an essential objective during this temporary period is to provide for the continuation of efficiently operated companies and to guard against their destruction, it is only fair to suggest that during this period any profits at all by such companies should be a secondary consideration. Government aid in this case is legitimate in order to save companies from disastrous loss but not in order to provide profits.

"The Commission further recommends the creation of a temporary Air Commerce Commission. In this recommendation I am unable to concur. I believe that we should avoid the multiplication of separate regulatory agencies in the field of transportation. Therefore in the interim before a permanent consolidated agency is created or designated over transportation as a whole, a division of the Interstate Commerce Commission can well serve the needs of air transportation.

"In the granting of powers and duties by the Congress, orderly Government calls for the administration of executive functions by those administrative departments or agencies which have functioned in the past, and, on the other hand

measures should be taken and what amendment, if any, the present general transportation policy of the Government should undergo.

Government Aid Only to Save

"I concur in this recommendation of the Federal Air-

line Commission, provided always that the grant of this duty to

the Interstate Commerce Commission be subject to provisions

against unreasonable profits by any private carrier. On account

of the fact that an essential objective during this temporary

period is to provide for the continuation of efficiently

operated companies and to guard against their destruction, it

is only fair to suggest that during this period any profits

at all by such companies should be a secondary consideration.

Government aid in this case is legitimate in order to save

companies from disastrous loss but not in order to provide

profits.

"The Commission further recommends the creation of

a temporary Air Commerce Commission. In this recommendation

I am unable to concur. I believe that we should avoid the

multiplication of separate regulatory agencies in the field

of transportation. Therefore in the interim before a perma-

nent consolidated agency is created or designated over trans-

portation as a whole, a division of the Interstate Commerce

Commission can well serve the needs of air transportation.

"In the granting of power and duties by the Congress

orderly Government calls for the administration of executive

functions by those administrative departments or agencies

which have functioned in the past, and, on the other hand

calls for the vesting of judicial functions in agencies already accustomed to such powers. It is this principle that should be followed in all of the various aspects of transportation legislation."

calls for the vesting of judicial functions in agencies already
accustomed to such powers. It is this principle that should
be followed in all of the various aspects of transportation
legislation."

CHAPTER IV

Types of International Service

The development of an air transportation system between North and South America was founded largely upon mail traffic. The achievement in establishing air mail transportation on a trans-continental scale in the United States brought immediate response from American business. This new and speedy method of delivering mail meant a saving of time and money, and a diminution of distance. The next step necessary, then, was to apply this new means of transport to uses beyond our borders into foreign countries. Two of our former Presidents, Calvin Coolidge and Herbert Hoover, heartily endorsed the movement in this direction. They foresaw the economic need of developing rapid transportation and communication between the United States and Latin American Republics. We have always striven to shorten the distance between North and South America. The building of the Panama Canal brought about a large increase in trade with Latin America. The improved American steamship service and American-built railroads also helped to speed up transportation to South America. The development of air transportation to South America was an economic need in 1929 because of the keen competition between the United States, Japan, England, France, and Germany for its trade. Since 1929, the competition has been even more pronounced. By means of trade treaties, Great Britain and Japan have gained a strong foothold in the trade of South America.⁽¹⁾ Japan's exports to South America jumped two hundred

(1) The Boston Globe, November 17, 1934.

CHAPTER IV

Types of International Services

The development of an air transportation system be-

tween North and South America was limited largely upon mail traffic. The achievement in establishing air mail transportation on a trans-continental scale in the United States brought immediate response from American business. This new and speedy method of delivering mail meant a saving of time and money, and a diminution of distance. The next step necessarily, then, was to apply this new means of transport to uses beyond our borders into foreign countries. Two of our former Presidents,

Calvin Coolidge and Herbert Hoover, heartily endorsed the movement in this direction. They foresaw the economic need of developing rapid transportation and communication between the United States and Latin American Republics. We have always striven to shorten the distance between North and South America. The building of the Panama Canal brought about a large increase in trade with Latin America. The improved American steamship service and American-built railroads also helped to speed up transportation to South America. The development of air transportation to South America was an

economic need in 1929 because of the keen competition between the United States, Japan, England, France, and Germany for its trade. Since 1929, the competition has been even more pronounced. By means of trade treaties, Great Britain and Japan have gained a strong foothold in the trade of South America. (2) Japan's exports to South America jumped two hundred

percent in 1933 over 1932. Its sales along the West Coast were particularly large. In 1934, Japanese exports declined somewhat in the Republics of Argentina and Uruguay, but increased in others. By virtue of a trade agreement with Argentina, Great Britain enjoys a trade advantage of twenty to thirty-five percent over sales by other countries. The British treaty, combined with a recent agreement signed between Germany and the Argentine, has deflected American efforts for trade revival to Brazil, Colombia and other countries.

Negotiations on the part of the United States with Central and South American and West Indian countries for new reciprocal trade treaties, together with impressive orders for American manufactures, have directed financial attention to the business possibilities in these countries. The State Department is at this time discussing reciprocal trade treaties with Brazil, Colombia, Haiti, Guatemala, Honduras, Nicaragua, Costa Rica and El Salvador. We have recently signed a preferential treaty with Cuba. An important change has taken place in the South American republics since the depression, a change which presents a hope for increased industrial activity in these countries. Almost all the South American Nations have increased their export surpluses during the year 1934.⁽¹⁾ This is important because export surpluses solves their problem of selling enough abroad to meet debt payments and to continue necessary foreign purchases. The depression has caused many of these Republics to foster new industries which present future possibilities of increased trade with foreign countries. The United States has every advantage in her favor in her efforts to regain her lost Latin American trade. A full devel-

(1) Boston Globe-November 17, 1934.

efforts to regain her lost Latin American trade. A full devel-

The United States has every advantage in her favor in her
future possibilities of increased trade with foreign countries.

of these Republics to foster new industries which present
necessary foreign purchases. The depression has caused many

selling enough abroad to meet debt payments and to continue
important because export surpluses solve their problem of

increased their export surpluses during the year 1934. This is
these countries. Almost all the South American Nations have

which presents a hope for increased industrial activity in
The South American Republics since the depression; a change

tial treaty with Cuba. An important change has taken place in
Costa Rica and El Salvador. We have recently signed a preferen-

with Brazil, Colombia, Haiti, Guatemala, Honduras, Nicaragua,
Department is at this time discussing reciprocal trade treaties

to the business possibilities in these countries. The States
for American manufacturers, have directed financial attention

reciprocal trade treaties, together with imperative orders
Central and South American and West Indian countries for new

Negotiations on the part of the United States with
to Brazil, Colombia and other countries.

Argentina, has deflected American efforts for trade revival
bined with a recent agreement signed between Germany and the

cent over sales by other countries. The British treaty, com-
Britain enjoys a trade advantage of twenty to thirty-five per-

in others. By virtue of a trade agreement with Argentina, Great
what in the Republics of Argentina and Uruguay, but increased

particularly large. In 1934, Japanese exports declined some-
percent in 1933 over 1932. Its sales along the West Coast were

opment of all transportation facilities between this country and Central and South America will aid her greatly in the fight. Special attention has already been applied in the case of steamship lines and land transportation. The development of air transportation to these countries is an economic need of the present time and should receive the full cooperation of the Government, the private operators, private enterprise, and the American people.

There are three general types of international service by which the commercial air transport is aiding this development. These services are classified as follows:⁽¹⁾

1. Mail

- A. Scheduled long distance day and night service.
- B. Scheduled overnight service.
- C. Scheduled short distance day service for the purpose of advancing connections.
- D. Scheduled short distance day service for the purpose of providing delivery on the same day as mailed.
- E. Special service for emergencies, operated only on call.

2. Merchandise

- A. Privately operated service for transportation of own shipments.
- B. Service operated only upon call for emergencies or special trips.
- C. Scheduled public service for transportation of merchandise in cooperation with express companies.

(1) Transport Aviation-A. Black, page 39 and 40.

operation of all transportation facilities between this country and Central and South America will aid her greatly in the future. Special attention has already been applied in the case of steamship lines and land transportation. The development of air transportation in these countries is an economic need of the present time and should receive the full cooperation of the Government, the private operators, private enterprises, and the American people.

There are three general types of international service by which the commercial air transport is aiding this development. These services are classified as follows: (a)

1. Mail

- A. Scheduled long distance day and night service.
- B. Scheduled overnight service.
- C. Scheduled short distance day service for the purpose of advancing connections.
- D. Scheduled short distance day service for the purpose of providing delivery on the same day as mailed.
- E. Special service for emergencies, operated only on call.

2. Merchandise

- A. Privately operated service for transportation of own shipments.
- B. Service operated only upon call for emergencies or special trips.
- C. Scheduled public service for transportation of merchandise in cooperation with express companies.

3. Passengers

- A. Sightseeing or similar service operated chiefly with regard to novelty rather than time saving.
- B. Service operated only upon call for special trips where high speed is desired without regard to cost.
- C. Scheduled transportation of passengers..
- D. Privately operated services such as the transportation of executives of a company having widely distributed points of activity.

In addition to the three major types classified above, there are other uses in which the airplane may serve on an international basis. They are:

- 1. Aerial mapping
- 2. Aerial photography
- 3. Advertising and publicity
- 4. Insecticide distributing
- 5. Crop sowing
- 6. Crop reporting
- 7. Timber surveys
- 8. Forest fire patrol
- 9. Border patrol
- 10. Taxi and charter service
- 11. Commuting
- 12. Prospecting
- 13. Payroll transport
- 14. Disaster relief work

3. Passengers

- A. Sighting or similar service operated chiefly with regard to novelty rather than time saving.
- B. Service operated only upon call for special trips where high speed is required without regard to cost.
- C. Scheduled transportation of passengers.
- D. Privately operated services such as the transportation of executives of a company having widely distributed points of activity.

In addition to the three major types classified above, there are other uses in which the airplane may serve on an international basis. They are:

- 1. Aerial mapping
- 2. Aerial photography
- 3. Advertising and publicity
- 4. Insecticide distribution
- 5. Crop sowing
- 6. Crop reporting
- 7. Timber surveys
- 8. Forest fire patrol
- 9. Border patrol
- 10. Taxi and charter service
- 11. Communication
- 12. Prospecting
- 13. Payroll transport
- 14. Disaster relief work

15. Traffic studies
16. Flying instruction
17. Personal flying
18. Motion picture work
19. Right-of-way surveys
20. Aerial circuses
21. Exploration
22. Newspaper and news reel delivery
23. Delivery of mail at sea
24. Sight-seeing
25. Reporting schools of fish
26. Transport of perishable merchandise
27. Real estate sales

A review of the three major international services, now in operation, will be made here.

Foreign air mail routes from the United States to Canada, Mexico, West Indies, Central and South America are as follows: ⁽¹⁾

Route 1 - New York, N.Y. to Montreal, Canada.

" 5 - Miami, Florida to Barranquilla, Colombia and Cristobal, Canal Zone, or Port-of-Spain, Trinidad.

" 5 - Miami, Florida to Cristobal, Canal Zone, via Central America.

" 5 - Miami, Florida to Havana, Cuba.

" 6 - Miami, Florida to Paramaribo, Dutch Guiana.

" 7 - Miami, Florida to Nassau, Bahamas

(1) United States Post Office Department-Schedule of Foreign Air Mail Routes-Effective October 22, 1934.

- 15. Traffic studies
- 16. Flying instruction
- 17. Personal flying
- 18. Motion picture work
- 19. Right-of-way surveys
- 20. Aerial diseases
- 21. Exploration
- 22. Newspaper and news reel delivery
- 23. Delivery of mail at sea
- 24. Sight-seeing
- 25. Reporting schools of fish
- 26. Transport of perishable merchandise
- 27. Real estate sales

A review of the three major international services now in operation, will be made here.

Foreign air mail routes from the United States to Canada, Mexico, West Indies, Central and South America are as follows: (1)

- Route 1 - New York, N.Y. to Montreal, Canada.
- " 2 - Miami, Florida to Barranquilla, Colombia and Cristobal, Canal Zone, or Port-of-Spain, Trinidad.
- " 3 - Miami, Florida to Cristobal, Canal Zone, via Central America.
- " 4 - Miami, Florida to Havana, Cuba.
- " 5 - Miami, Florida to Pinar del Rio, Dutch Guiana.
- " 6 - Miami, Florida to Nassau, Bahamas.

Route 8 - Brownsville, Texas, to Mexico City,
Mexico, and San Salvador, El Salvador.

" 9 - Cristobal, Canal Zone to Montevideo,
Uruguay.

" 10 - Paramaribo, Dutch Guiana, to Rio de
Janeiro, Brazil, or Buenos Aires,
Argentina.

Air-mail services from the United States to foreign countries is augmented by the transcontinental air-mail service. Mail planes leave New York and San Francisco twice daily and receive mail at intermediate points, including Cleveland, Chicago, Omaha, Cheyenne and Salt Lake City. This service expedites the dispatch of air-mail addressed for delivery in foreign countries to the dispatching exchange office. Articles mailed in this country and addressed for delivery in foreign countries, except Canada, when intended to be dispatched by air within this country to the United States exchange office, from which the regular mails for the country of destination concerned are regularly dispatched, must be prepaid a flat rate of ten cents for the first ounce or fraction and fifteen cents for each succeeding ounce or fraction. This flat rate includes the regular postage and the fee for air dispatch in this country, but does not provide for dispatch by air to or within foreign countries. Such articles should be conspicuously marked "By air in U.S.A. to exchange office." Articles which are to be dispatched by air to a foreign country via Miami or Brownsville, or within a foreign country, should have affixed a blue label, "Par Avion (by Air-Mail)".

Route 8 - Brownsville, Texas, to Mexico City,
Mexico, and San Salvador, El Salvador.
9 - Cristobal, Canal Zone to Montevideo,
Uruguay.
10 - Paramaribo, Dutch Guiana, to Rio de
Janeiro, Brazil, or Buenos Aires,
Argentina.

Air-mail services from the United States to foreign
countries is augmented by the transcontinental air-mail ser-
vice. Mail planes leave New York and San Francisco twice
daily and receive mail at intermediate points, including
Cleveland, Chicago, Omaha, Cheyenne and Salt Lake City. This
service expedites the dispatch of air-mail addressed for de-
livery in foreign countries to the dispatching exchange
office. Articles mailed in this country and addressed for
delivery in foreign countries, except Canada, when intended
to be dispatched by air within this country to the United
States exchange office, from which the regular mails for
the country of destination concerned are regularly dispatched,
must be prepaid a flat rate of ten cents for the first ounce
or fraction and fifteen cents for each succeeding ounce or
fraction. This flat rate includes the regular postage and
the fee for air dispatch in this country, but does not pro-
vide for dispatch by air to or within foreign countries.
Such articles should be conspicuously marked "By air in
U.S.A. to exchange office." Articles which are to be dis-
patched by air to a foreign country via Miami or Brownsville,
or within a foreign country, should have affixed a blue label
"Par Avion (by Air-Mail)".

FOREIGN AIR MAIL POSTAGE RATES (1)

(including dispatch by the United States domestic and foreign air mail routes to the country named and, in the case of Canada, Colombia, Cuba and Mexico, dispatch by the domestic air mail routes of those countries where available.)

	<u>Cents per half-ounce</u>
Argentina.....	55
Bahamas.....	10
Barbados.....	20
Bolivia (by ordinary means from Arequipa, Peru).....	40
Brazil.....	50
Canada.....	6 cents per ounce
Canal Zone.....	20
Chile.....	50
Colombia.....	35
Costa Rica.....	20
Cuba.....	10
Dominican Republic.....	10
Dutch West Indies:	
Curacao, Bonaire, Aruba.....	30
St. Martins, St. Eustatius, Saba.....	20
Ecuador.....	30
Guadeloupe (including Desirade, Les Saintes, Marie Galante, Petite Terre, St. Bartholomew (Barthelemy) and the French part of St. Martins).....	20
Guatemala.....	15
Guianas (British, Dutch, French).....	30
Haiti.....	10
Honduras (British).....	15

(1) United States Post Office Department-Schedule of Foreign Air Mail Routes-Effective October 22, 1934.

FOREIGN AIR MAIL POSTAGE RATES (1)

(including dispatch by the United States domestic and foreign air mail routes to the country named and, in the case of Canada, Colombia, Cuba and Mexico, dispatch by the domestic air mail routes of those countries where available.)

Cents per half-ounce

Argentina.....	55
Bahamas.....	10
Barbados.....	20
Bolivia (by ordinary means from Arequipa, Peru).....	40
Brazil.....	50
Canada.....	5 cents per ounce
Canal Zone.....	20
Chile.....	20
Colombia.....	35
Costa Rica.....	20
Cuba.....	10
Dominican Republic.....	10
Dutch West Indies.....	
Guam, Pohnpei, Yap, and other islands.....	30
Haiti.....	20
Honduras.....	20
Guadeloupe (including Les Saintes, Marie Galante, and Petite Terre, St. Bartholomew (Barthelemy) and the French part of St. Martin).....	20
Guatemala.....	15
Guinea (British, Dutch, French).....	20
Haiti.....	10
Honduras (British).....	15

(1) United States Post Office Department, Bureau of Post Office Inspection, Washington, D. C., 1934.

Honduras (Republic).....	15
Jamaica.....	10
Leeward Islands:	
Anguilla, Antigua, Barbuda, Dominica, Montserrat,	
Nevis, Redonda, St. Christopher (St. Kitts).....	20
British Virgin Islands.....	10
Martinique.....	20
Mexico.....	10
Nicaragua.....	15
Panama Republic.....	20
Paraguay (by ordinary means from Buenos Aires, Argentine).	55
Peru.....	40
Puerto Rico.....	10
Salvador (El).....	15
Trinidad.....	20
Uruguay.....	55
Venezuela (by air to Maracaibo, Cumarebo, La Guaira, Caripito).	30
Venezuela (including dispatch by Venezuelan air mail service Maracaibo or La Guaira).....	45
Virgin Islands (United States).....	10
Windward Islands (Grenada, Grenadines, St. Lucia, St. Vincent).....	20

.....15	Bahamas (Republic)
.....10	Jamaica
	Leeward Islands:
	Anguilla, Antigua, Barbuda, Dominica, Montserrat,
.....20	Nevis, Redonda, St. Christopher (St. Kitts)
.....10	British Virgin Islands
.....20	Martinique
.....10	Mexico
.....15	Nicaragua
.....20	Panama Republic
.....25	Paraguay (by ordinary means from Buenos Aires, Argentina)
.....30	Peru
.....10	Puerto Rico
.....15	Salvador (El)
.....20	Trinidad
.....25	Uruguay
.....30	Venezuela (by air to Maracaibo, Guayaquil, Lagunillas, Orizaba)
.....45	Venezuela (including dispatch by Venezuelan air mail service Maracaibo or La Guaira)
.....10	Virgin Islands (United States)
.....20	Windward Islands (Grenada, Guadeloupe, St. Lucia, St. Vincent)

The rapid growth of both the domestic and foreign air-mail services of the United States can be attributed to the fact that American commerce and industry quickly recognized the savings to be effected by flying their mail. The time-saving feature of air mail has resulted not only in actual money savings, but has increased tremendously, the possibilities of an enlarged foreign trade. A few illustrations showing how some of the American firms are making use of the air mail will serve to clarify this point. Banks, in general, have adopted this type of mail service because in banking, the element of time is very important. Some of the articles sent by air mail by banks include: checks, drafts and notes for collection and credit, saving interest charges on funds in transit; advices of payment of drafts; important and rush letters; letters to connect with mail to Europe and other foreign destinations; shipping documents; securities; urgent correspondence with foreign mails. Insurance companies patronize the air mail service because the nature of their business also demands the fastest delivery possible. The principal articles sent by air mail by insurance companies include: letters, including authorizations and releases; applications for various contracts, and proofs of loss; daily reports, card records, monthly accounts and statistical statements; all policies to distant offices; small and urgent supplies to agents; checks for claims, policies, etc.; surety and contract bonds, legal papers, farm mortgages and occasional securities; reinsurance claims. General trading business houses have many reasons for using the air mail service. They know, from experience, that delay in transit has cost them the loss of a contract

The rapid growth of both the domestic and foreign air-mail services of the United States can be attributed to the fact that American commerce and industry quickly recognized the savings to be effected by flying their mail. The time-saving feature of air mail has resulted not only in actual money savings, but has increased tremendously the possibilities of an enlarged foreign trade. A few illustrations showing how some of the American firms are making use of the air mail will serve to clarify this point. Banks, in general, have adopted this type of mail service because in banking, the element of time is very important. Some of the articles sent by air mail by banks include: checks, drafts and notes for collection and credit, saving interest charges on funds in transit; advice of payment of drafts; important and rush letters; letters to connect with mail to Europe and other foreign destinations; shipping documents; securities; urgent correspondence with foreign mail. Insurance companies patronize the air mail service because the nature of their business also demands the fastest delivery possible. The principal articles sent by air mail by insurance companies include: letters, including authorizations and releases; applications for various contracts, and proofs of loss; daily reports, card records, monthly accounts and statistical statements; all policies to distant offices; small and urgent supplies to agents; checks for claims, policies, etc.; surety and contract bonds; legal papers, farm mortgages and occasional securities; reinsurance claims. General trading business houses have many reasons for using the air mail service. They know, from experience, that delay in transit has cost them the loss of a contract

or sale. They were quick, therefore, to respond to the many advantages which the air mail service offered them. A few of the articles sent by air mail by business houses include: contract and credit letters, documents, and sales promotion material; advertising proofs and copy of proofs for approval; news pictures and photographic mats; small packages; repair parts; articles urgently needed at destination; announcement of new products; rush shipments of samples and "out-of-stock" merchandise.

Air Express

¹"Close coordination with the older forms of transport seems to be an essential to the successful development of air transport." This particular quotation seems to exemplify commercial air transport especially in regard to air express. The air transport operators have made arrangements for handling air express by utilizing the ground organization of a railroad express agency. This agency collects packages from the senders, transports them over the air lines with which it has contracts, and delivers them in the cities of destination. Several air transport lines, however, provide their own facilities for collecting and delivery or arranging for this service with a parcel or messenger service. Although the transportation of express over the scheduled air lines began in the United States at about the same time contract air mail service started, its development was not as rapid. The operators concentrated upon building up the air mail and air passenger service and regarded air express as a side issue. From 1926 to 1931 the design of

¹Transport Aviation-Archibald Black, Page 12.

or sale. They were quick, therefore, to respond to the many advantages which the air mail service offered them. A few of the articles sent by air mail by business houses include: contract and credit letters, documents, and sales promotion material; advertising proofs and copy of proofs for approval; news pictures and photographic mats; small packages; repair parts; articles urgently needed at destination; announcement of new products; rush shipments of samples and "out-of-stock" merchandise.

Air Express

"Close coordination with the other forms of transport seems to be an essential to the successful development of air transport." This particular quotation seems to exemplify commercial air transport especially in regard to air express. The air transport operators have made arrangements for handling air express by utilizing the ground organization of a railroad express agency. This agency collects packages from the senders, transports them over the air lines with which it has contracts, and delivers them in the cities of destination. Several air transport lines, however, provide their own facilities for collecting and delivery or arranging for this service with a parcel or messenger service. Although the transportation of express over the scheduled air lines began in the United States at about the same time contract air mail service started, its development was not as rapid. The operators concentrated upon building up the air mail and air passenger service and regarded air express as a side issue. From 1923 to 1931 the design of

commercial airplanes was constantly improved. Larger planes with powerful motors gave the operators more opportunity to compete with the railroad and steamship in rendering express service. As in the case of mail delivery, where speed is essential many types of merchandise can be sent profitably by air express. The rapid increase of air express business within the United States during the years 1931 to 1933, brought new efforts on the part of operators maintaining foreign air lines to build up this part of their business. The possibilities of increasing our Latin American trade by using air express service are great. It offers the fastest international transport, and American exporters now realize that where speedy delivery of merchandise is more important than cost of transmission, the air express is the logical carrier. Air express is not expected to do away with the other means of express transportation, but rather to move that part of the Nation's merchandise that must get to its destination in the shortest possible time.

Through the efforts of the Pan American Airways System, the largest air transport operator of international trade from the United States, American merchandise may be shipped by air express to every important market in Mexico, the West Indies, Central and South America. For the first time in our history, an international express service was established bringing thirty countries three times closer than before to the United States. An entirely new procedure in international shipping had to be established. Many problems involving international shipping had to be simplified. Through covenants arranged with the countries concerned a new international service, the first of its kind in the world, has been

commercial airplanes was constantly improving. Larger planes with powerful motors gave the operators more opportunity to compete with the railroad and steamship in handling express service. As in the case of mail delivery, where speed is essential many types of merchandise can be sent profitably by air express. The rapid increase of air express business within the United States during the years 1931 to 1933, brought new efforts on the part of operators maintaining foreign air lines to build up this part of their business. The possibilities of increasing our Latin American trade by using air express services are great. It differs from fastest international transport, and American exporters now realize that where speedy delivery of merchandise is more important than cost of transportation, the air express is the logical carrier. Air express is not expected to do away with the other means of express transportation, but rather to move that part of the Nation's merchandise that must get to its destination in the shortest possible time.

Through the efforts of the American Airways system, the fastest air transport operator of international trade from the United States, American merchandise may be shipped by air express to every important market in Mexico, the West Indies, Central and South America. For the first time in our history, an international express service was established bringing thirty countries closer than before to the United States. An entirely new procedure in international shipping had to be established. Many problems involving international shipping had to be simplified. Through covenants arranged with the countries concerned a new international service, the first of its kind in the world, has been

made possible, a high-speed express shipping service for American foreign trade. This modern method of international express requires a single document instead of the numerous forms previously demanded. The regulations have been unified. The delays at national borders have been eliminated. In short, a real modern service has been introduced to speed recovery of America's present trade in these foreign markets. Because of its flexibility, speed and economy, it opens markets to many American products which for lack of express facilities have been heretofore confined to domestic sale. By the reduction of shipping time to a third of what it formerly was, new sales opportunities are gained. The most distant market in South America is only a week away from the United States. This means that products from a distributing center in the United States can be delivered to these foreign markets almost as quickly as they can be distributed to sales outlets within the United States. Importers can get products and samples into the United States in a fraction of the time previously required. The countries of the West Indies and Central America are now as close to the Atlantic sea-board as are the Middle Western states by railway express.

The Pan American International Air Express has, through its years of actual experience, produced valuable data as to what type of products or articles may be shipped. Any article or product which can be shipped by ordinary express within the United States may be transported by air express. The records of this company show that it has transported practically every item in the foreign trade lists with the single exception of heavy live stock.

made possible, a high-speed express shipping service for agents can foreign trade. This modern method of international express requires a single document instead of the numerous forms previously demanded. The regulations have been unified. The delays at national borders have been eliminated. In short, a mail modern service has been introduced to speed recovery of America's present trade in these foreign markets. Because of its flexibility, speed and economy, it opens markets to many American products which for lack of express facilities have been heretofore confined to domestic sale. By the reduction of shipping time to a third of what it formerly was, new sales opportunities are gained. The most distant market in South America is only a week away from the United States. This means that products from a distributing center in the United States can be delivered to these foreign markets almost as quickly as they can be distributed to sales outlets within the United States. Importers can get products and supplies into the United States in a fraction of the time previously required. The countries of the West Indies and Central America are now as close to the Atlantic sea-board as are the Middle Western states by railway express.

The Pan American International Air Express has, through its years of actual experience, produced valuable data as to what type of products or articles may be shipped. Any article or product which can be shipped by ordinary express within the United States may be transported by air express. The records of this company show that it has transported practically every item in the foreign trade lists with the single exception of heavy live stock.

A list of items indicating the different types of merchandise for which air express has proved profitable for many shippers follows: ⁽¹⁾

Accountants' Reports	Coffee, Cocoa, etc.	Instruments
Advertising Material	Copper Utensils and Pipe	Jewelry
Aluminum Household Utensils	Dental Supplies	Lamps
Antitoxins	Diamonds	Leather Goods
Automobile Parts, Accessories	Dogs, Cats, other pets	Linens
Baby Chicks	Dress Goods	Lingerie
Batteries	Drugs	Magazines
Bees	Eggs	Machinery Accessories
Blueprints	Electric Motors	Marine Motors
Bonds	Electric Water Heaters	Medical Supplies
Bulbs	Electric Goods and Supplies	Millinery
Bridal Outfits	Electrotypes	Mineral Samples
Cameras	Engraving Cuts and Dies	Mining Machinery parts
Candies	Films	Ore Samples
Carbons	Filters	Oxygen (in drums)
Catalogs	Fish (Tropical, Live)	Paints
Chemical Supplies	Fishing Tackle and Apparel	Perfumes
Chicle	Flowers	Phonograph Records
Cigarette Lighters	Fruits	Photographic Supplies
Cigar and Cigarettes	Glassware	Precious stones
Clocks and Watches	Gold Bullion	Printers' Materials
Cloth	Hardware Supplies	Projectors (Movie)
Clothing	Hatching Eggs	Propellers (marine)
	Hats	
	Hosiery	

⁽¹⁾ Pan American Airways System Pamphlet-Published 1934.

A list of items indicating the different types of merchandise for which air express has proved profitable for many shippers follows: (1)

Accountants' Reports	Coffee, Cocoa, etc.	Instrument
Advertising Material	Copper Utensils and Pipe	Leakage
Aluminum Household Utensils	Dental Supplies	Lamps
Antioxins	Diamonds	Leather Goods
Automobile Parts, Accessories	Logs, Cuts, other parts	Linens
Baby Chicks	Truss Goods	Linkages
Batteries	Drugs	Machineries
Bees	Eggs	Machinery Accessories
Blueprints	Electric Motors	Marine Motors
Bonds	Electric Water Heaters	Medical Supplies
Bulbs	Electric Goods and Supplies	Military
Bridal Outfits	Electrotypes	Mineral Samples
Cameras	Engraving Cuts and Dies	Mining Machine-ery parts
Candies	Films	Ore Samples
Carbons	Filters	Oxygen (in drums)
Catalogs	Fish (Tropical, Live)	Paints
Chemical Supplies	Fishing Tackle and Apparal	Perfumes
Chicle	Flowers	Phonograph Records
Cigarette Lighters	Fruits	Photographic Supplies
Cigar and Cigarettes	Glassware	Triculous stones
Clocks and Watches	Gold Bullion	Printers' materials
Cloth	Hardware Supplies	Latex
Clothing	Hatching Eggs	Projectors (Movie)
	Rats	Propellers (air)
	Roastery	

Quinine, Patent Medicines	Stationery and Supplies
Radios and Parts	Steamship Operators' Documents
Raincoats	Style Goods
Razors and Blades	Surgical Instruments
Rubber Goods	Tableware
Samples	Toys
Serums	Vaccines
Shoes	Wearing Apparel
Silk Goods	X-Ray Films
Silverware	Yeast
Sketches and Cartoons	Zinc Plates
Snails	
Soap	
Sporting Goods	

The question of the cost of shipment by air express is in many cases a very important one. There is no doubt as to the time saving feature, but if the cost makes it unprofitable the shipper will seek other means of transportation. The Pan American System has demonstrated that, in many instances, the cost of shipping by international air express is no more than by ordinary three-times-slower shipping. In determining the true cost, it is necessary to take into consideration all the factors encountered in both methods of shipment. The company has shown that air express shipments eliminate some of the costs experienced by ordinary shipping. They maintain that shipment by air express eliminates: (1) handling charges, (2) trans-shipment cost from country-to-country, (3) document or paper costs down to a fraction, (4) troublesome "extra" costs,

Stationery and Supplies	Quinine, Patent Medicines
Steamship Operators' Documents	Radios and Parts
Styie Goods	Raincoats
Surgical Instruments	Razors and Blades
Tableware	Rubber Goods
Toys	Samples
Vaccines	Serums
Wearing Apparel	Shoes
X-Ray Films	Silk Goods
Yeast	Silverware
Zinc Plates	Sketches and Cartoons
	Snails
	Soap
	Sporting Goods

The question of the cost of shipment by air express is in many cases a very important one. There is no doubt as to the time saving feature, but if the cost makes it unprofitable the shipper will seek other means of transportation. The Pan American system has demonstrated that, in many instances, the cost of shipping by international air express is no more than by ordinary three-times-slower shipping. In determining the true cost, it is necessary to take into consideration all the factors encountered in both methods of shipment. The company has shown that air express shipments eliminate some of the costs experienced by ordinary shipping. They maintain that shipment by air express eliminates: (1) handling charges, (2) trans-shipment cost from country-to-country, (3) document or paper costs down to a fraction, (4) troublesome "extra" costs,

(5) time "in-transit", and (6) costly clearance delays. In an examination of their rate schedule we find that all shipments are subject to a weight or volume rate and a valuation rate. The weight or volume rates are based on one pound (200 cubic inches) or fraction. Valuation charges are assessed per \$100., fractions being charged proportionately. Insurance is available and is assessed per \$100. (fractions charged proportionately). The minimum charges are: weight or volume \$1.00; valuation, 10 cents; and insurance 10 cents. The domestic express tariffs, by air or rail, from a given city to the proper international terminal are, of course, assessed in addition to the international air express rates. An illustration of the cost of air express is given in the following table taken from a pamphlet issued by the Pan American System in 1934.

To	From	Miami, Fla.		
		Per Lb.	Val.	Ins.
Barranquilla, Colombia		.61	.40	.25
Belize, British Honduras		.47	.40	.25
Buenaventura, Colombia		.89	.40	.25
Buenos Aires, Argentina		1.56	.50	.30
Cayenne, French Guiana		1.02	.40	.25
Georgetown, British Guiana		.90	.40	.25
Guatemala, Guat., C.A.		.64	.40	.25
Guayaquil, Ecuador		1.04	.40	.25
Havana, Cuba		.20	.18	.10
Kingston, Jamaica		.39	.25	.15
Lima, Peru		1.18	.50	.30
Managua, Nicaragua		.69	.40	.25
Maracaibo, Venezuela		.69	.40	.25
Mexico City		.64	.40	.25

(3) time "in-transit", and (4) costly clearance delays. In an examination of their rate schedules we find that all shipments are subject to a weight or volume rate and a valuation rate. The weight or volume rates are based on one pound (200 cubic inches) or fraction. Valuation charges are assessed per \$100. Fractions being charged proportionately. Insurance is available and is assessed per \$100. (Fractions charged proportionately). The minimum charges are: weight or volume \$1.00; valuation, 10 cents; and insurance 10 cents. The domestic express tariffs, by air or rail, from a given city to the proper international terminal are, of course, assessed in addition to the international air express rates. An illustration of the cost of air express is given in the following table taken from a pamphlet issued by the Pan American System in 1934.

To	From	Per lb.	Per cu. ft.
Barranquilla, Colombia	1.51	.40	.25
Belize, British Honduras	.47	.40	.25
Buenaventura, Colombia	.89	.40	.25
Buenos Aires, Argentina	1.33	.60	.30
Camaguey, French Guiana	1.02	.40	.25
Georgetown, British Guiana	.90	.40	.25
Guatemala, Guatemala	.44	.40	.25
Guayaquil, Ecuador	1.04	.40	.25
Havana, Cuba	.20	.18	.10
Kingston, Jamaica	.39	.25	.15
Lima, Peru	1.18	.50	.30
Managua, Nicaragua	.88	.40	.25
Maracaibo, Venezuela	.80	.40	.25
Mexico City	.84	.40	.25

To	From	Miami, Fla.		
		Per Lb.	Val.	Ins.
Montevideo, Uruguay		1.60	.50	.30
Nassau, Bahamas		.20	.18	.10
Panama City		.76	.40	.25
Paramaribo, Dutch Guiana		.97	.40	.25
Port au Prince, Haiti		.37	.25	.15
Rio de Janeiro, Brazil		1.50	.50	.30
San Jose, Costa Rica		.74	.40	.25
San Juan, Puerto Rico		.53	.40	.25
Santiago (Chile)		1.38	.50	.30
Santo Domingo, D.R.		.47	.40	.25
Tela, Honduras		.55	.40	.25
Any Interior Colombian Point		1.16	.40	.25

Air Passenger Service.

In many cases, the introduction of air passenger service from the United States to Mexico, the West Indies, Central and South America was as a result of a demand for the service by the people, rather than the selling of a new idea by the air transport operator. The Pan American System found that where they attempted to merely open mail lines for a certain number of months a year, they met such a demand for service that they speeded up the offering of passenger facilities.⁽¹⁾ It is a well known fact that these countries, especially South America, have always been hampered by poor transportation facilities. The big air transport

(1) Aviation's Place in Tomorrow's Business-Earl Reeves, Page 125.

To	From	Rate, U.S.	Rate, U.S.
Montevideo, Uruguay	1.50	.50	.50
Nassau, Bahamas	.20	.15	.10
Panama City	.75	.40	.25
Paramaribo, Dutch Guiana	.95	.40	.25
Port au Prince, Haiti	.35	.25	.15
Rio de Janeiro, Brazil	1.50	.50	.50
San Jose, Costa Rica	.75	.40	.25
San Juan, Puerto Rico	.55	.40	.25
Santiago (Chile)	1.50	.50	.50
Santo Domingo, D.R.	.45	.40	.25
Tela, Honduras	.55	.40	.25
Any Interior Colombian Point	1.15	.40	.25

Air Passenger Service.

In many cases, the introduction of air passenger service from the United States to Mexico, the West Indies, Central and South America was as a result of a demand for the service by the people, rather than the selling of a new idea by the air transport operator. The Pan American System found that where they attempted to merely open mail lines for a certain number of months a year, they met such a demand for service that they speeded up the offering of passenger facilities. It is a well known fact that these countries, especially South America, have always been hampered by poor transportation facilities. The air air transport

was a vast improvement over the narrow guage railroad or burro riding the mountain passes.

Many problems confronted the Pan American System in building an airway from the United States into foreign countries. In respect to the creation of an air-passenger service, an entirely new problem had to be met. Travel by air to distant countries entailed longer journeys than did local trips from city to city at home. For this reason, the problem of providing equipment suitable for the comfort of passengers resulted in the building of huge air liners, and in the establishment of large landing fields and passenger terminals in foreign countries. These new passenger liners lead the aircraft of the world in size, in efficiency, and in the luxury of travel comforts. They are empowered by four huge motors and carry forty-four passengers within their five spacious cabins. These great ships mark a tremendous step forward in the development of air transportation in America. The establishment of landing fields large enough to accomodate these ships created many engineering problems. The fact that they were located in distant countries also brought difficulties that would not arise at home. Passenger terminals had to be constructed to provide for the comfort and convenience of travelers. Such things as restaurants, lounging rooms, and observation decks for the friends of passengers, had to be provided. An efficient personnel including pilots, stewards, and attendants at terminals, had to be trained all over again to meet the new demands created by international air passenger service.

was a vast improvement over the narrow gauge railroad or burro riding the mountain passes.

Many problems confronted the Pan American system in building an airway from the United States into foreign countries. In respect to the creation of an air-passenger service, an entirely new problem had to be met. Travel by air to distant countries entailed longer journeys than did local trips from city to city at home. For this reason, the problem of providing equipment suitable for the comfort of passengers resulted in the building of huge air liners, and in the establishment of large landing fields and passenger terminals in foreign countries. These new passenger liners had the air-craft of the world in class, in efficiency, and in the luxury of travel comforts. They are empowered by four huge motors and carry forty-four passengers within their five spacious cabins. These great ships mark a tremendous step forward in the development of air transportation in America. The establishment of landing fields large enough to accommodate these ships created many engineering problems. The fact that they were located in distant countries also brought difficulties that would not arise at home. Passenger terminals had to be constructed to provide for the comfort and convenience of travelers. Such things as restaurants, lounging rooms, and observation decks for the friends of passengers, had to be provided. An efficient personnel including pilots, stewards, and attendants at terminals, had to be trained all over again to meet the new demands created by international air passenger service.

During the past five years, the Pan American System has made remarkable progress in establishing this international network of airways. The advantages of air passenger service to these foreign countries can best be explained by reviewing some of the accomplishments of this System. They established an airway between Miami, Florida and Havana, Cuba; another from Miami to Nassau, Bahamas; and a third to the West Indies line.⁽¹⁾ These airways operated in sbhedule with train service of the Atlantic Coast Line and Florida and East Coast railroads. Co-operation between this System and other railroads in the United States serve to bring about savings and convenience to the traveler never before experienced. Such railroads as the Illinois Central, the Chicago and Eastern Illinois Railroad, the Pennsylvania Railroad, the Louisville and Nashville Railroad, and the New Haven Railroad, cooperate by selling air-rail tickets and give information to passengers concerning routings and connections. Another route, established by the Pan American System, goes along the north coast of South America to Port of Spain and then northward along the Windward and Leeward Islands to San Juan, Porto Rico. This route, known as the "Lindbergh Circle" because of his assistance in establishing it, combined with the other lines described above, completed a Caribbean airway system. Further development of airways in South America culminated in what is now known as the "Great Circle." This route follows the western coastline of South America down to Santiago, Chile, crosses the Andes Mountains and the Republic of Argentina to Buenos Aires; the route travels northward along the coastline to the Island of Trinidad, where it connects with the Caribbean route. These two main

⁽¹⁾Aviation's Place in Tomorrow's Business-Earl Reeves,Page 125.

During the past five years, the Pan American System has made remarkable progress in establishing this international network of airways. The advantages of air passenger service to these foreign countries can best be explained by reviewing some of the accomplishments of this system. They established an airway between Miami, Florida and Havana, Cuba; another from Miami to Nassau, Bahamas; and a third to the West Indies line. These airways operated in schedule with train service of the Atlantic Coast Line and Florida and East Coast Railroads. Co-operation between this system and other railroads in the United States serve to bring about savings and convenience to the traveler never before experienced. Such railroads as the Illinois Central, the Chicago and Eastern Illinois Railroad, the Pennsylvania Railroad, the Louisville and Nashville Railroad, and the New Haven Railroad, cooperate by selling air-rail tickets and give information to passengers concerning routings and connections. Another route, established by the Pan American System, goes along the north coast of South America to Port of Spain and then northward along the Atlantic and backward inland to San Juan, Porto Rico. This route, known as the "Alfred P. Gray" because of his assistance in establishing it, combined with the other lines described above, completed a Caribbean airway system. Further development of airways in South America culminated in what is now known as the "Great Circle." This route follows the western coastline of South America down to Santiago, Chile, crosses the Andes Mountains and the Republic of Argentina to Buenos Aires; the route travels northward along the coastline to the island of Trinidad, where it connects with the Caribbean route. These two main

lines provide air passenger service to all the important cities in these Southern countries. The W. R. Grace Steamship Company, a co-owner of the Pan American System, operates a huge steamship service from the United States to the west coast of South America. This fact eliminates any competition between the airplane and steamer. That portion of the airway that runs from Panama to Buenos Aires operates under joint name and ownership, being known as the "Pan American-Grace Airways."

Examples of the saving of time in traveling by air transport to various cities in these countries serve to illustrate better than any other method the economic need that is filled. Mexico City, the capital of Mexico is thirty-five hours distant by air from New York as against ten days travel by rail. Mexico City to Brownsville, Texas, is five hours by air, and thirty-six to forty-eight hours by train. By means of this service, transportation direct to any principal city in the West Indies and Central America is made within two and one-half days, as compared to three and one-half to eight days by ordinary transportation. Likewise, transportation by air direct to the farthest capital in South America is made within seven days from the United States, as compared to twelve to twenty-one days by other means.

Activities of the international air transport other than for mail, merchandise, or passenger service include aerial advertising, aerial photography, sales and service agents for planes and engines, special private flights, and emergency flights. Some of these services have a definite effect on the future of international air transportation. Aerial advertising on an international basis is accomplished

lines provide air passenger service to all the important cities in these Southern countries. The W. T. Grace Steamship Company, a co-owner of the Pan American System, operates a huge steamship service from the United States to the west coast of South America. This fact eliminates any competition between the air-planes and steamers. That portion of the airway that runs from Panama to Buenos Aires operates under joint name and ownership, being known as the "Pan American-Grace Airways."

Examples of the saving of time in traveling by air transport to various cities in these countries serve to illustrate better than any other method the economic need that is filled. Mexico City, the capital of Mexico is thirty-five hours distant by air from New York as against ten days travel by rail. Mexico City to Brownsville, Texas, is fifteen hours by air, and thirty-six to forty-eight hours by train. By means of this service, transportation direct to any principal city in the West Indies and Central America is made within two and one-half days, as compared to three and one-half to eight days by ordinary transportation. Likewise, transportation by air direct to the farthest capital in South America is made within seven days from the United States, as compared to twelve to twenty-one days by other means.

Activities of the international air transport other

than for mail, merchandise, or passenger service include aerial advertising, aerial photography, sales and service agencies for planes and engines, special private flights, and emergency flights. Some of these services have a definite effect on the future of international air transportation. Aerial advertising on an international basis is accomplished

by having a plane fitted as a "traveling show case" to carry samples of products to potential markets. Aerial photography may be used to good advantage in the case of engineering surveys being made of foreign territory for investment purposes. Private flying is increasing in the United States and it holds future possibilities in the international field.

Factors Governing International Air Route Development

The countries of Mexico, the West Indies, Central and South America, provide abundant opportunities commercially for American business men. The development of these republics has been very slow due to several causes: first, climatic conditions, especially in South America, has discouraged the development of industry; second, accessibility to the interior of the majority of the countries is difficult; third, the backwardness of the people; fourth, a lack of coal hinders the development of manufacturing.⁽¹⁾ Mexico and the countries of Central America are rich in natural resources. One of the greatest oil districts in the world is located around Tampico, Mexico. There are also large quantities of silver, zinc, lead, and copper found in Mexico. Gold and silver are found in paying quantities in Central America, particularly in Nicaragua and Honduras. Most of these resources are poorly developed because of the meager transportation facilities. Access to the western coast of Mexico is hampered by mountain ranges. The West Indies are made up of two groups of islands. The larger islands, Cuba, Porto Rico, Haiti, and Jamaica, are called the Greater Antilles, while the many smaller islands to the east and south are known as the Lesser Antilles. The largest island of this group is Cuba. The industry of this island is largely agricul-

⁽¹⁾Economic Geography-Z.Carleton Staples and G.Morell York,Page 527.

by having a plane lifted as a "traveling show case" to carry samples of products to potential markets. Aerial photography may be used to good advantage in the case of engineering surveys being made of foreign territory for investment purposes. Air travel is increasing in the United States and it holds future possibilities in the international field.

Factors Governing International Air Route Development

The countries of Mexico, the West Indies, Central and South America, provide abundant opportunities commercially for American business men. The development of these republics has been very slow due to several causes: first, climatic conditions, especially in South America, has discouraged the development of industry; second, accessibility to the interior of the majority of the countries is difficult; third, the backwardness of the people; fourth, a lack of coal hinders the development of manufacturing. Mexico and the countries of Central America are rich in natural resources. One of the greatest oil districts in the world is located around Tampico, Mexico. There are also large quantities of silver, zinc, lead, and copper found in Mexico. Gold and silver are found in paying quantities in Central America, particularly in Nicaragua and Honduras. Most of these resources are poorly developed because of the meager transportation facilities. Access to the western coast of Mexico is hampered by mountain ranges. The West Indies are made up of two groups of islands. The larger islands, Cuba, Porto Rico, Haiti, and Jamaica, are called the Greater Antilles, while the many smaller islands to the east and south are known as the Lesser Antilles. The largest island of this group is Cuba. The industry of this island is largely agricultural.

Physical Geography - Location, Climate, and Natural Resources of the West Indies and Central America

tural and is mostly centered around two crops, sugar cane and tobacco. Other crops include bananas, coconuts, lemons and pineapples. Manufacturing in Cuba consists of sugar-refining and the making of cigars and plaited straw hats. The island of Haiti consists of two republics. The western end of the island known as Haiti, and the eastern end, the Dominican Republic. This island is important because of its forests, which contain cabinet woods, dyewoods and ebony. Its agricultural products consist of sugar, tobacco, some cotton and bananas. The island of Jamaica belongs to the British Empire. Its crops consist of coffee, bananas, sugar cane and coconuts. Most of its trade is now carried on with the United States. The island of Trinidad, in the group of islands known as the Lesser Antilles, is noted for its lake of pitch. The top of this lake, because of exposure to the air, forms a crust of asphalt. This crust is cut and shipped to various parts of the world to be used for paving.

The countries of South America present, potentially, the greatest market of the three groups. Most of the commerce of South America has to do with products of agriculture, mining and the forests. The plains of South America are among the richest in the world. They are divided into three groups, called the plains of the Orinoco River located in Venezuela, the plains of the Amazon River of Brazil, and the plains of the Plata River system in Argentina.⁽¹⁾ The plains of the Orinoco River provide grass lands available for cattle-raising. The plains of the Amazon River are covered with forests, undeveloped for want of transportation facilities. This region contains a

(1) Economic Geography-Z. Carleton Staples and G. Morell York, Page 530.

and is mostly centered around two crops, sugar cane and
 tobacco. Other crops include bananas, coconuts, lemons and
 pineapples. Manufacturing in Cuba consists of sugar-refining
 and the making of cigars and distilled spirituous. The island
 of Haiti consists of two republics. The western end of the
 island known as Haiti, and the eastern end, the Dominican
 Republic. This island is important because of its forests,
 which contain cabinet woods, dyewoods and ebony. Its agri-
 cultural products consist of sugar, tobacco, some cotton and
 bananas. The island of Jamaica belongs to the British Empire.
 Its crops consist of coffee, bananas, sugar cane and coconuts.
 Most of its trade is now carried on with the United States.
 The island of Trinidad, in the group of islands known as the
 Lesser Antilles, is noted for its lake of pitch. The top of
 this lake, because of exposure to the air, forms a crust of
 asphalt. This crust is cut and shipped to various parts of
 the world to be used for paving.

The countries of South America present, potentially,
 the greatest market of the three groups. Most of the commerce
 of South America has to do with products of agriculture, mining
 and the forests. The plains of South America are among the
 richest in the world. They are divided into three groups,
 called the plains of the Orinoco River located in Venezuela,
 the plains of the Amazon River of Brazil, and the plains of
 the Plata River system in Argentina. The plains of the Orinoco
 River provide grass lands available for cattle-raising. The
 plains of the Amazon River are covered with forests, undeveloped
 for want of transportation facilities. This region contains a

large variety of valuable woods and is the home of the famous Para rubber tree. Other products of this region include bananas, dates and coconuts. Farther south, in the uplands of this valley, is the coffee, tobacco and sugar belt. Four-fifths of the world's supply of coffee is grown in this region. The plains of the Plata River system are noted for the hardwoods of the northern section and the great wheat and pasture lands of the southern section. The Andes Mountains, located along the entire western section of the continent, limits the development of the interior of South America because of the difficulty and cost of constructing railroads.

The west coast countries include, Ecuador, Peru, Bolivia and Chile. These countries produce a variety of products due to climatic conditions. In Peru, the famous cacao beans, from which chocolate and cocoa are made, have become an important article of commerce. Production of minerals, chiefly rubies and emeralds, is carried on in the northern section of Peru. Silver mines in Peru and Bolivia have produced large quantities of silver and are still productive. The production of nitrate constitutes the chief product of Chile, although some copper is produced.

In general, manufacturing in South America consists of articles made by hand. Peru grows some cotton and also operates a few cotton mills. Ecuador is the chief center for the making of the Panama hat. Chile has large steel works and smelteries of copper. The production of iodine is an important industry of Chile. In the temperate zone, manufacturing has made some progress. Uruguay has a large trade in beef extract; flour milling, refining of sugar; and the tanning of leather

large variety of valuable woods and is the home of the famous
 Para rubber tree. Other products of this region include co-
 coas, dates and coconuts. Further south, in the uplands of
 this valley, is the coffee, tobacco and sugar belt. Four-
 fifths of the world's supply of coffee is grown in this region.
 The plains of the Plata River valley are noted for the hard-
 woods of the northern section and the great wheat and pasture
 lands of the southern section. The Andes Mountains, located
 along the entire western section of the continent, limit the
 development of the interior of South America because of the
 difficulty and cost of constructing railroads.

The west coast countries include Ecuador, Peru,
 Bolivia and Chile. These countries produce a variety of
 products due to climatic conditions. In Peru, the famous cacao
 beans, from which chocolate and cocoa are made, have become an
 important article of commerce. Production of minerals, chiefly
 rubies and emeralds, is carried on in the northern section of
 Peru. Silver mines in Peru and Bolivia have produced large
 quantities of silver and are still productive. The production
 of nitrate constitutes the chief product of Chile, although
 some copper is produced.

In general, manufacturing in South America consists
 of articles made by hand. Peru grows some cotton and also
 operates a few cotton mills. Ecuador is the chief center for
 the making of the Panama hat. Chile has large steel works and
 smelteries of copper. The production of iodine is an important
 industry of Chile. In the temperate zone, manufacturing has
 made some progress. Uruguay has a large trade in beef exports;
 from milking, refining of sugar; and the tanning of leather

are activities carried on largely in Brazil and Argentina. South American countries buy large quantities of manufactured goods from Europe, because South America is near the ports of Europe and the people favor Europe as a place to buy finished products. Recently, however, the United States has succeeded in increasing its trade with these countries. With the aid of air lines, American business hopes to continue this trend.

South America has many large rivers and engineers have given much thought to the problem of using them to better advantage. A huge waterway running from north to south with canals joining the waters of the various river systems would make a short route to Panama and the ports of North America. The lack of habitation along such a vast route, due to the large areas of wilderness, would make such a waterway too expensive to build and maintain.

The building of railroads in South America has been found to be unprofitable due to the topography of the continent. There has been some development, however, in the republics of Argentina, Chile, Uruguay and Brazil. An interoceanic railroad between Buenos Aires, Argentina and Valparaiso, Chile, serves to unite those two important cities with steamship service of both the Atlantic and Pacific Oceans. Another railroad connects Montevideo, the capital of Uruguay and Rio de Janeiro, capital of Brazil. Chile has a railroad which runs from Tacna and Iquique south to Puerto Montt. This line has numerous intersections running east and west, thereby serving a real transportation need. Peru, Ecuador and Colombia have very little railroad transportation. The topography of these republics and also the other northern republics render railroad trans-

are activities carried on largely in Brazil and Argentina. Both American countries buy large quantities of manufactured goods from Europe, because South America is near the ports of Europe and the people favor Europe as a place to buy finished products. Recently, however, the United States has succeeded in increasing its trade with these countries. With the aid of air lines, American business hopes to continue this trend.

South America has many large rivers and engineers have given much thought to the problem of using them to better advantage. A huge waterway running from north to south with canals joining the waters of the various river systems would make a short route to Panama and the ports of North America. The lack of habitation along such a vast route, due to the large areas of wilderness, would make such a waterway too expensive to build and maintain.

The building of railroads in South America has been found to be unprofitable due to the topography of the continent. There has been some development, however, in the republics of Argentina, Chile, Uruguay and Brazil. An interoceanic railroad between Buenos Aires, Argentina and Valparaiso, Chile, serves to unite those two important cities with steamship service of both the Atlantic and Pacific Oceans. Another railroad connects Montevideo, the capital of Uruguay and Rio de Janeiro, capital of Brazil. Chile has a railroad which runs from Tarma and Iquique south to Puerto Montt. This line has numerous inter-sections running east and west, thereby serving a real transportation need. Peru, Ecuador and Colombia have very little railroad transportation. The topography of these republics and also the other northern republics renders railroad trans-

portation unprofitable.

The foregoing general summary of conditions existing in these southern countries is given first, to show the need of improvement in transportation facilities; second, to reveal the tremendous possibilities for trade between these republics and the United States; and third, to prove that of the three groups, South America has the greater need of air transportation development.

American business men who have had occasion to experience travel conditions in these countries have postponed their investigations of business opportunities there until some means of rapid transportation became established. The Pan American System has, in a few years, established this means in the form of air transport. It has definitely proven that air transportation of mail, of passengers and express has many advantages over other means of transportation. The company has overcome the many problems arising in such an undertaking. It has simplified international trade by securing agreements of the various countries regarding shipments by air. It has provided the necessary equipment for the efficient operation of an airway system between the United States and these countries. The steady growth of its operations seems to indicate that future expansion will be necessary and that American business will enjoy a greater participation in Latin American trade.

position unprofitable.

The foregoing general summary of conditions existing in these southern countries is given first, to show the need of improvement in transportation facilities; second, to reveal the tremendous possibilities for trade between these republics and the United States; and third, to prove that of the three groups, South America has the greater need of air transportation development.

American business men who have had occasion to experience travel conditions in these countries have postponed their investigations of business opportunities there until some means of rapid transportation became established. The Pan American System has, in a few years, established this means in the form of air transport. It has definitely proven that air transportation of mail, of passengers and express has many advantages over other means of transportation. The company has overcome the many problems arising in such undertaking. It has simplified international trade by securing agreements of the various countries regarding shipments by air. It has provided the necessary equipment for the efficient operation of an airway system between the United States and these countries. The steady growth of its operations seems to indicate that future expansion will be necessary and that American business will enjoy a greater participation in Latin American trade.

CHAPTER V

International Scope of Aviation

Regulations of the United States Department of Commerce
Governing Entry and Clearance of Aircraft

The Bureau of Air Commerce of the Department of Commerce has full authority to regulate, for the purpose of maintaining safety standards, the operation of all aircraft to and from the United States. Other regulations, however, coming from other departments of the government (and for various reasons,) have to be obeyed by the operator of aircraft engaged in international flight or persons making such flights.⁽¹⁾

The United States Customs Service has issued regulations to be observed in flights across the borders of the United States. These regulations briefly relate to: the landing of aircraft at airports of entry; the advance notice of arrival; the report of landing; the inspection and payment of duty; and the procedure with respect to granting permission for foreign aircraft to proceed inland.

The requirements of the Public Health Service are contained in the Quarantine Laws and Regulations of the United States. These regulations apply to aircraft and aircraft passengers in the same way that they apply to other forms of transportation.

The Immigration Service of the United States has issued regulations applying specifically to aircraft. These

⁽¹⁾United States Department of Commerce-Aeronautics Bulletin #7-C.

CHAPTER V

International Scope of Aviation

Regulations of the United States Department of Commerce

Governing Entry and Clearance of Aircraft

The Bureau of Air Commerce of the Department of Commerce has full authority to regulate, for the purpose of maintaining safety standards, the operation of all aircraft to and from the United States. Other regulations, however, coming

from other departments of the government (and for various reasons,) have to be obeyed by the operator of aircraft engaged in international flight or persons making such flights. The United States Customs Service has issued regula-

tions to be observed in flights across the borders of the United States. These regulations briefly relate to: the landing of aircraft at airports of entry; the advance notice of arrival; the report of landing; the inspection and payment of duty; and the procedure with respect to granting permission for foreign aircraft to proceed inland.

The requirements of the Public Health Service are contained in the Quarantine Laws and Regulations of the United States. These regulations apply to aircraft and aircraft passengers in the same way that they apply to other forms of transportation.

The Immigration Service of the United States has issued regulations applying specifically to aircraft. These

regulations include: the designation of airports of entry for aliens; manifests; landing at other than designated airports of entry; notices of arrival and inspection of passengers and aliens.

The Department of Agriculture, through the Plant Quarantine and Control Administration, has issued regulations applying to all types of common carriers, including aircraft, operating on an international basis.

With international air transportation from the United States steadily increasing, it is important that air transport operators and persons contemplating flights to foreign countries should familiarize themselves with the regulations of the Bureau of ^{Air} Commerce. These regulations are divided into two parts, namely, regulations regarding the clearance of aircraft and regulations regarding the entry of aircraft.

Rather than attempt to describe these regulations in detail, I have caused them to be reprinted here.

¹Department of Commerce Regulations Governing Entry and Clearance of Aircraft.

CLEARANCE

Section 1. When Required.

The person having charge or command of any aircraft of United States registry transporting merchandise (including the United States mails) or passengers for hire, and all aircraft of foreign registry, bound to a foreign port, shall

¹United States Department of Commerce-Aeronautics Bulletin #7-C.

regulations include: the designation of airports of entry for
aircraft; mailboxes; landing at other than designated airports
of entry; notices of arrival and inspection of passengers and
aircraft.

The Department of Agriculture, through the Plant
Quarantine and Control Administration, has issued regulations
applying to all types of common carriers, including aircraft,
operating on an international basis.

With international air transportation from the
United States steadily increasing, it is important that air
transport operators and persons contemplating flight to
foreign countries should familiarize themselves with the regu-
lations of the Bureau of Commerce. These regulations are di-
vided into two parts, namely, regulations regarding the
clearance of aircraft and regulations regarding the entry of
aircraft.

Rather than attempt to describe these regulations
in detail, I have chosen them to be repeated here.
Department of Commerce Regulations Governing Entry and
Clearance of Aircraft.

GENERAL

Section 1. When Required.
The person having charge or control of any aircraft of
United States registry transporting merchandise (including
the United States mails) or passengers for hire, and all
aircraft of foreign registry, bound to a foreign port, shall

clear at the customs port of entry nearest the place of departure, or at the airport of departure if such airport has been designated as a customs airport.

Aircraft of United States registry not transporting merchandise or passengers for hire are not required to clear on departing from the United States.

Section 2. What Constitutes.

Clearance shall consist of the filing of a manifest, together with export declarations on Customs Form 7525 for all cargo on board, and a correct list of passengers, if any, received on board, giving their names and addresses; and, in case of an aircraft of foreign registry, departing from a port of entry other than that at which it first arrived, the surrender of the permit to proceed inland issued at the first port.

(A) Manifest.-The manifest shall specify the kinds and qualities of the articles contained on board and the value and total quantity of each kind of article. The manifest shall also contain a statement by the person in charge or command of the aircraft that the said manifest contains a full, just, and true account of all articles laden on board such aircraft by the owners, shippers, consignors, or carrier, respectively, and that the values of such articles are truly stated according to their actual cost or the values which they truly bear at the port and time of exportation; and shall show the foreign port or country in which such articles are truly intended to be landed. Such statement shall be under

clear at the customs port of entry nearest the place of departure, or at the airport of departure if such airport has been designated as a customs airport.

Aircraft of United States registry not transporting mail, passengers or passengers for hire are not required to clear on departing from the United States.

Section 2. What Constitutes.

Clearance shall consist of the filing of a manifest, together with export declarations on Customs Form 7525 for all cargo on board, and a correct list of passengers, if any, received on board, giving their names and addresses; and, in case of an aircraft of foreign registry, departing from a port of entry other than that at which it first arrived, the surrender of the permit to proceed inland issued at the first port.

(A) Manifest.--The manifest shall specify the kinds and quantities of the articles contained on board and the value and total quantity of each kind of article. The manifest shall also contain a statement by the person in charge of command of the aircraft that the said manifest contains a full, true and true account of all articles taken on board such aircraft by the owner, shipper, consignee, or carrier, respectively, and that the values of such articles are truly stated according to their actual cost or the values which they truly bear at the port and time of exportation; and shall show the foreign port or country to which such articles are truly intended to be landed. Such statement shall be under

oath unless the total value of the merchandise is less than \$25 or it is to be shipped to or through Mexico or Canada.

The statement "as per export declarations attached" may be made on the manifest in lieu of the description of the merchandise, provided the manifest is accompanied by complete export declarations. The manifest may be the way-bill or a copy thereof, or a copy of the manifest prepared for the foreign customs. If the export declarations are not at hand for any of the merchandise a pro forma export declaration for such merchandise may be executed by the person in charge or command of the aircraft on Customs Form 7303 and a bond given (on the same form) for the production of the export declarations within six (6) days after the date of exportation. A term bond may be given if desired.

Section 3. Clearance Certificate.

A clearance certificate, Commerce Form 1378, may be issued when requested by the person in charge of the aircraft.

Section 4. Record.

A record of clearances of aircraft shall be kept at ports of departure on Commerce Form 1401, Record of Vessels Clearing for Foreign Ports, modified as necessary.

ENTRY

Section 5. Notice Prior to Arrival.

Before taking off from a foreign port or place for the United States, the pilot of any aircraft shall first inform the collector of customs at the place of first landing of the intended flight, which must be an airport of entry unless

each unless the total value of the merchandise is less than \$25 or if it is to be shipped to or through Mexico or Canada. The statement "as per export declaration attached" may

be made on the manifest in lieu of the declaration of the merchandise, provided the manifest is accompanied by complete export declarations. The manifest may be the way-bill or a copy thereof, or a copy of the manifest prepared for the foreign customs. If the export declarations are not at hand for any of the merchandise a pro forma export declaration for such merchandise may be executed by the person in charge or command of the aircraft on Customs Form 7503 and a bond given (on the same form) for the production of the export declarations within six (6) days after the date of exportation. A term bond may be given if desired.

Section 3. Clearance Certificate.

A clearance certificate, Commerce Form 1378, may be issued when requested by the person in charge of the aircraft. Section 4. Record.

A record of clearances of aircraft shall be kept at ports of departure on Commerce Form 1401, Record of Vessels Clearing for Foreign Ports, modified as necessary.

ENTRY

Section 5. Notice Prior to Arrival.

Before taking off from a foreign port or place for the United States, the pilot of any aircraft shall first inform the collector of customs at the place of first landing of the intended flight, which must be an airport of entry unless

provision for landing elsewhere is made with the proper customs officials in advance, giving the type of aircraft, the markings thereon, the name of the pilot, and the approximate time of arrival. The requirement of this advance notice, however, shall not apply after service by such aircraft on a regular schedule has been established.

Section 6. Report to Customs-Comply with Regulations.

The person having charge of any aircraft arriving in the United States from any foreign port shall immediately report his arrival to the customs office at the port of entry or customhouse at which such aircraft shall be first destined in the United States, and shall comply with the United States customs and immigration laws and regulations.

Section 7. Operation of Foreign Aircraft in the United States-Authority for Operation.

Aircraft and airmen of foreign countries with which the United States has no reciprocal agreement on aircraft and piloting privileges must obtain suitable authority from the Secretary of Commerce before proceeding inland by air. Evidence of this authority shall be retained aboard the aircraft at all times while operating in the United States.

United States Airports of Entry

All aircraft entering the United States or departing therefrom are required to clear through airports of entry, unless special permission is obtained to land at or depart from some other airport. Clearance at airports shall be in accordance with the Department of Commerce Regulations

provision for landing elsewhere is made with the proper customs officials in advance, giving the type of aircraft, the markings thereon, the name of the pilot, and the approximate time of arrival. The requirement of this advance notice, however, shall not apply after service by such aircraft on a regular schedule has been established.

Section 8. Report to Customs-Comply with regulations.

The person having charge of any aircraft arriving in the United States from any foreign port shall immediately report his arrival to the customs office at the port of entry or customs house at which such aircraft shall be first landed in the United States, and shall comply with the United States customs and immigration laws and regulations.

Section 9. Operation of Foreign Aircraft in the United States-Authority for Operation.

Aircraft and airman of foreign countries with which the United States has no reciprocal agreement on aircraft and pilotage privileges must obtain suitable authority from the Secretary of Commerce before proceeding inland by air. Evidence of this authority shall be retained aboard the aircraft at all times while operating in the United States.

United States Airports of Entry

All aircraft entering the United States or departing therefrom are required to clear through airports of entry, unless special permission is obtained to land at or depart from some other airport. Clearance at airports shall be in accordance with the Department of Commerce regulations.

Governing Entry and Clearance of Aircraft, Aeronautics Bulletin Number 7-C; with the regulations of the Customs Service and Public Health Service of the Treasury Department; the Immigration Service of the Department of Labor; and the Plant and Quarantine Control Administration of the Department of Agriculture.

A list of airports designated airports of entry by the Secretaries of Labor and Treasury, follows:

¹United States Airports of Entry

Location	Name of Airport
Regular	
Ajo, Arizona	Ajo municipal airport
Albany, New York	Albany municipal airport
Brownsville, Texas	Brownsville municipal airport
Buffalo, New York	Buffalo municipal airport
Detroit, Michigan	Wayne County airport
El Paso, Texas	El Paso municipal airport
Key West, Florida	Meacham Field
Miami, Florida	Pan-American Field (or 36th Street)
Seattle, Washington	Boeing Field
Seattle, Washington	Lake Union (seaplane)

¹United States Department of Commerce - Airway Bulletin Number 1 Page 135.

Governmental and Commercial, Agricultural, and
 in Number 7-1 with the results of the various services
 and public health services of the various departments and
 institutions of the Department of Labor; and the
 and the various Commercial Administration of the Department of
 Agriculture.

List of airports designated airports of primary
 of the Department of Labor and Treasury, follows:

United States Airports of Primary

Location	Name of Airport
Albany, New York	Albany Municipal Airport
Brownsville, Texas	Brownsville Municipal Airport
Butte, New York	Butte Municipal Airport
Chicago, Illinois	Chicago County Airport
El Paso, Texas	El Paso Municipal Airport
Key West, Florida	Key West Field
Miami, Florida	Van-Allen Field (now John S. Taylor)
Portland, Oregon	Portland Field
Seattle, Washington	Boeing Field (now John S. Taylor)

United States Department of Commerce - Bureau of Aeronautics
 Bureau of Aeronautics

¹United States Airports of Entry

Location	Name of Airport
Temporary	
Akron, Ohio	Akron municipal airport
Bellingham, Washington	Graham Field
Calais, Maine	Pan American Airways seaplane base, St. Croix River
Cleveland, Ohio	Cleveland municipal airport
Detroit, Michigan	Detroit municipal airport
Detroit, Michigan	Ford airport
Douglas, Arizona	Douglas international airport
Duluth, Minnesota	Duluth municipal airport
Duluth, Minnesota	Duluth Boat Club seaplane base
Eagle Pass, Texas	Eagle Pass airport
Great Falls, Montana	Great Falls municipal airport
Havre, Montana	Havre municipal airport
Juneau, Alaska	Juneau airport
Ketchikan, Alaska	Ketchikan airport
Laredo, Texas	Laredo airdrome
Malone, New York	Malone airport
Miami, Florida	Dinner Key seaplane base
Minot, North Dakota	Port of Minot
Nogales, Arizona	Nogales municipal airport
Ogdensburg, New York	Billings Field
Ogdensburg, New York	Ogdensburg Harbor
Pembina, North Dakota	Fort Pembina airport

¹United States Department of Commerce-Airway Bulletin #1-page 135.

United States Airports of Entry

Location	Name of Airport
Akron, Ohio	Akron Municipal Airport
Bellingham, Washington	Graham Field
Celina, Maine	Pan American Airways seaplane base, St. Croix River
Cleveland, Ohio	Cleveland Municipal Airport
Detroit, Michigan	Detroit Municipal Airport
Detroit, Michigan	Ford Airport
Flagstaff, Arizona	Flagstaff International Airport
Minneapolis, Minnesota	Minneapolis Municipal Airport
Minneapolis, Minnesota	Minneapolis Boat Club seaplane base
Fort Worth, Texas	Fort Worth Airport
Great Falls, Montana	Great Falls Municipal Airport
Great Falls, Montana	Great Falls Municipal Airport
Juneau, Alaska	Juneau Airport
Ketchikan, Alaska	Ketchikan Airport
Laredo, Texas	Laredo Airbase
Melrose, New York	Melrose Airport
Miami, Florida	Miami Key seaplane base
Minot, North Dakota	Minot Airport
Moglia, Arizona	Moglia Municipal Airport
Ogdensburg, New York	Millers Field
Ogdensburg, New York	Ogdensburg Harbor
Pembina, North Dakota	Port Pembina Airport

¹United States Airports of Entry (Continued)

Location	Name of Airport
Temporary	
Plattsburg, New York	Mobodo airport
Portal, North Dakota	Portal municipal airport
Port Angeles, Washington	Port Angeles airport
Port Townsend, Washington	Port Townsend airport
Put In Bay, Ohio	P ut In Bay airport
San Diego, California	San Diego municipal airport (Lindbergh Field)
San Juan, Puerto Rico	Isle Grande airport
Scobey, Montana	Scobey airport
Skagway, Alaska	Skagway municipal airport
Skagway, Alaska	Seaplane base
Spokane, Washington	Spokane municipal airport (Felts Field)
Swanton, Vermont	Missisquoi airport
Watertown, New York	Watertown airport
West Palm Beach, Florida	Roosevelt flying service base (Currie Common Park)
Wrangell, Alaska	Airport and seaplane base

¹United States Department of Commerce - Airway Bulletin
Number 1 - Page 135.

Any designated airport of entry is subject to withdrawal if it is found that the volume of business clearing through the port does not justify maintenance of inspection equipment and personnel. The Bureau of Commerce requires that the designated airport of entry shall provide without cost to the Federal Government suitable office and other space for the exclusive use of the Federal officials connected with the port. A suitable surfaced loading area shall, in each case, be provided by the airport at a convenient location with respect to such office space. This loading area shall be reserved for the use of aircraft entering or clearing through the airport.

All civil aircraft have the right to use these airports of entry for clearance and entry purposes and no charge shall be made. If the airport, however, is used as a base for commercial operations or private operations, then charges for such use may be made.

All aircraft entering or clearing through airports of entry shall receive the required servicing by airport personnel. The charge for this servicing shall not exceed the schedule of charges prevailing at the airport in question. The airport of entry is required to see that all civil airplanes and airmen of the United States using the airport be licensed by the Secretary of Commerce. The designation as an airport of entry may be withdrawn if any of the above requirements are not complied with.⁽¹⁾

The continued growth of international air transportation from the United States to the countries of Latin America has resulted in agreements whereby private aircraft

⁽¹⁾United States Department of Commerce-Aeronautics Bulletin #7-C.

any designated airport of entry is subject to withdrawal if it is found that the volume of business clearing through the port does not justify maintenance of inspection equipment and personnel. The Bureau of Commerce requires that the designated airport of entry shall provide without cost to the Federal Government suitable office and other space for the exclusive use of the Federal officials connected with the port. A suitable surfacing area shall, in each case, be provided by the airport at a convenient location with respect to such office space. This location area shall be reserved for the use of aircraft entering or clearing through the airport.

All aircraft shall have the right to use these airports of entry for clearance and entry purposes and no change shall be made. If the airport, however, is used as a base for commercial operations or private operations, then charges for such use may be made.

All aircraft entering or clearing through airports of entry shall receive the restricted servicing by airport personnel. The charge for such servicing shall not exceed the schedule of charges prevailing at the airport in question. The airport of entry is restricted to use that all civil airplanes and aircraft of the United States using the airport be licensed by the Secretary of Commerce. The designation as an airport of entry may be withdrawn if any of the above requirements are not complied with.

The continued growth of international air transportation from the United States to the countries of Latin America has resulted in agreements whereby private aircraft

of the United States registry may enter some of these countries without special authorization. These agreements are based on Article 4 of the Habana Convention on Commercial Aviation, signed on February 20, 1928. It provides that private aircraft of either of the two countries agreeing are entitled to enter the other country on pleasure or tourist flights without the necessity of requesting formal authorization for each flight, subject to compliance with the technical requirements regarding entry and the regulations in force in the country to be visited. The following nations have signed such agreements with the United States: Haiti, Dominican Republic, Nicaragua, Panama, Costa Rica, and Honduras.⁽¹⁾

Operations of International Lines from the United States.

A study of statistics on foreign air transport routes show six transport companies operating twenty-three routes to Canada and Latin America. Two of these companies operate both domestic and foreign services. Five routes offer a daily round trip service, the other routes providing service at various times weekly. All international routes combined are scheduled to fly a daily average of 17,954 airplane miles. There are 22,790 miles of international airway routes from the United States. Of the twenty-three routes to foreign countries, thirteen provide facilities for the transportation of mail, passengers and express; nine offer passenger and express service; one route operating between

⁽¹⁾United States Department of Commerce-Air Commerce Bulletin, Volume 6, #4, Page 92.

of the United States registry may enter some of these coun-
tries without special authorization. These agreements are
based on Article 4 of the Habana Convention on Commercial
Aviation, signed on February 20, 1928. It provides that
private aircraft of either of the two countries mentioned
are entitled to enter the other country on pleasure or
tourist flights without the necessity of requesting formal
authorization for each flight, subject to compliance with
the technical requirements regarding entry and the regula-
tions in force in the country to be visited. The following
nations have signed such agreements with the United States:
Haiti, Dominican Republic, Nicaragua, Panama, Costa Rica,
and Honduras.

Operation of International Lines
from the United States

A study of statistics on foreign air transport
routes show six transport companies operating twenty-three
routes to Canada and Latin America; two of these companies
operate both domestic and foreign services. Five routes
offer a daily round trip service. The other routes provide
service at various times weekly. All international routes
combined are scheduled to fly a daily average of 17,554 air-
plane miles. There are 22,750 miles of international airway
routes from the United States. Of the twenty-three routes
to foreign countries, thirteen provide facilities for the
transportation of mail, passengers and express; nine offer
passenger and express service; one route operating between
the United States and Mexico is operated by Mexican Airlines.
Volume 6, 44, page 22.

Burlington, Vermont and Montreal, Quebec, maintains a passenger service.⁽¹⁾ The tremendous growth of international air transport is indicated by a study of the table on page 88 and also appendices E and F. Steady growth of the number of passengers carried shows that the traveler's mind is gradually leaning toward a decision in favor of scheduled air transportation. Over a period of eight years 1926 to 1933, the income to contractors of foreign air mail clearly shows the enormous strength of this new means of mail delivery. A comparison of yearly statistics for the period 1926 to 1933, discloses the fact that shipment of express by air has grown faster than either of the other two. The number of pounds of express carried by air in 1933 is almost three times the amount for 1931.

Air-line operators engaged in rendering international service are continually improving this service in order that its growth may continue. Some of their planes are now equipped with berths for night flights, sound-insulated cabin walls, and precooled or preheated air cabins. The improvement of engine design has increased the speed of the plane from one-hundred miles an hour to rates approaching two-hundred miles per hour. A table on page 89 discloses an interesting comparison between hours of surface transportation and hours by air travel between various points in the western hemisphere.

The Pan American Airways System and its subsidiaries own and operate eighteen of the twenty-three foreign air transport routes. Of the 22,790 airway miles covered by foreign air transport routes, this system operates 20,510.

(1)United States Department of Commerce-Air Commerce Bulletin, Volume 6, #4, Page 104.

Burlington, Vermont and Montreal, Quebec, maintains a passenger service. The tremendous growth of international air transport is indicated by a study of the table on page 86 and also appears

also in Table I. Steady growth of the number of passengers

carried shows that the traveler's mind is gradually turning

toward a decision in favor of scheduled air transportation.

Over a period of eight years 1925 to 1933, the income to con-

tractors of foreign air mail clearly shows the enormous strength

of this new means of mail delivery. A comparison of yearly

statistics for the period 1925 to 1933, discloses the fact that

shipment of express by air has grown faster than either of the

other two. The number of pounds of express carried by air in

1933 is almost three times the amount for 1921.

Air-line operators engaged in rendering international

services are continually improving this service in order that

its growth may continue. Some of their plans are now coupled

with berths for night flights, sound-insulated cabin walls, and

protection of pressurized air cabins. The improvement of engine

design has increased the speed of the plane from one-hundred

miles an hour to over approaching two-hundred miles per hour.

A table on page 82 discloses an interesting comparison between

hours of surface transportation and hours by air travel between

various points in the western hemisphere.

The Pan American Airway System and its subsidiaries

operate own and operate thirteen of the twenty-three foreign

air transport routes. Of the 22,750 weekly miles covered

by foreign air transport routes, this system operates 20,000.

(United States Department of Commerce-Air Commerce Division,

Volume 5, 4th Edition, 1934.)

*Scheduled Air Transport Operations Statistics for the Periods
January-June 1933, July-December 1933, and January-June, 1934

DOMESTIC

	January- June 1933	July-De- cember 1933	January- June 1934
Miles flown	23,012,743	25,758,810	17,723,665
Passengers carried	196,835	296,306	191,088
Express carried (pounds)	660,082	850,133	916,063
Passenger-miles flown	64,502,479	108,989,640	75,289,435

FOREIGN

Miles flown	2,849,377	3,021,615	3,793,993
Passengers carried	38,304	37,495	50,684
Express carried (pounds)	395,794	546,803	656,951
Passenger-miles flown	12,139,914	13,168,046	18,282,137

DOMESTIC AND FOREIGN

Miles flown	25,862,120	28,780,425	21,517,658
Passengers carried	235,139	333,801	141,772
Express carried (pounds)	1,055,876	1,396,936	1,573,014
Passenger-miles flown	76,642,393	122,157,686	93,571,572

*United States Department of Commerce, Air Commerce Bulletin,
Volume 6, Number 3, Page 51.

*Scheduled Air Transport Operations Statistics for the periods January-June 1933, July-December 1933, and January-June 1934

DOMESTIC

January- June 1934	July-De- cember 1933	January- June 1933
14,733,685	23,758,810	23,019,743
141,088	295,306	196,835
918,003	830,133	860,085
78,289,455	108,889,640	84,508,479

FOREIGN

3,783,993	2,021,515	2,849,377
80,884	37,495	38,504
836,981	345,803	395,794
18,282,137	13,168,046	12,158,914

DOMESTIC AND FOREIGN

21,517,678	28,780,425	25,869,120
141,972	332,801	235,339
2,273,014	1,176,936	1,255,879
96,571,593	122,157,686	96,667,393

*United States Department of Commerce, Air Commerce Bulletin,
Volume 6, Number 3, Page 51.

*Comparison of Time in Land and Air Transportation

Washington, DC. to	Hours, Surface Transportation	Miles great circle course	Hours by air 10-hrs. per day average speed 100MPH	Hours by air continuous flight at average speed 100 MPH	Hours by air continuous flight at average speed 200 MPH
Mexico City, Mexico	94	1,920	33.2	19.2	9.6
Tegucigalpa, Honduras	303	1,840	32.4	18.4	9.2
Managua, Nicaragua	558	1,950	33.5	19.5	9.8
Panama City, Panama	153	2,075	48.8	20.8	10.4
Havana, Cuba	42	1,140	25.4	11.4	5.7
Port au Prince, Haiti	114	1,425	28.3	14.3	7.2
Bogota, Colombia	216	2,375	51.8	23.8	11.9
Caracas, Venezuela	197	2,065	48.7	20.7	10.4
Rio de Janeiro, Brazil	318	4,775	103.8	47.8	23.9
Montevideo, Uruguay	414	5,250	122.5	52.5	26.3
Buenos Aires, Argentina	426	5,200	122.0	52.0	26.0
Santiago, Chile	507	5,020	120.2	50.2	25.1
Lima, Peru	288	3,550	77.5	35.5	17.8

Country	Area	Population	Area	Population	Area	Population	Area	Population
Argentina	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Brazil	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Chile	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Colombia	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Costa Rica	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Cuba	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
El Salvador	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Guatemala	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Honduras	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Mexico	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Nicaragua	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Panama	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Paraguay	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Peru	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Puerto Rico	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Uruguay	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Venezuela	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000

Continued on page 359

The total average airplane miles scheduled daily for foreign air transport is 17,954. Of this amount the Pan American Airways System flies 13,472. With these figures in mind, it is only natural to suppose that the experience gained by this System in its operation of such an extensive international network of airlines should be of immense value to any study of international air transport. In the transportation of passengers, the System has adopted a procedure which has proved successful in attracting additional patronage from year to year. This procedure follows:⁽¹⁾

1. Passengers are asked to congregate either at a central ticket office in the heart of a city, from which they are taken to the airport, or at the airport itself.
2. A passenger station is located at the airport. The size of the station depends upon the amount of travel activity at that point. Regardless of their size, these stations are planned for the following purposes:
 - A. To provide comfort and convenience for the passenger.
 - B. To provide adequate facilities for carrying on all necessary paper work and for meeting the local government requirements as regards customs, registration, etc.
 - C. Each station built to suggest the solidarity of the air line.
3. At time of departure, the airplane arrives at the station platform ready to go, its motors having

⁽¹⁾Aviation's Place in Tomorrow's Business, Earl Reeves, Page 128.

The total average airplane miles scheduled daily for foreign air transport is 14,954. Of this amount the Pan American Airways System flies 13,472. With these figures in mind, it is only natural to suppose that the experience gained by this system in its operation of such an extensive international network of airlines should be of immense value to any study of international air transport. In the transportation of passengers, the system has adopted a procedure which has proved successful in attracting additional passengers from year to year. This procedure follows:

1. Passengers are asked to concentrate either at a central ticket office in the heart of a city, from which they are taken to the airport, or at the airport itself.

2. A passenger station is located at the airport. The size of the station depends upon the amount of travel activity at that point. Regardless of their size, these stations are planned for the following purposes:

- A. To provide comfort and convenience for the passenger.
- B. To provide adequate facilities for carrying on all necessary paper work and for meeting the local government requirements as regards customs, registration, etc.
- C. Each station built to represent the solidarity of the air line.

3. At time of departure, the airplane arrives at the station platform ready to go, its motor having

been previously warmed up in the hangar. Departure notice is given and the passengers emerge from the station under a covered runway. They board the plane in the same manner as if they were boarding a passenger train or steamship.

4. A steward finds seats for the passengers and sees that all remain seated until the airplane is 1000 feet or more in the air. This is done without the passengers knowledge. During the flight, the steward supplies magazines, describes views and suggests seat changes. The radio operator of the plane is in constant contact with ground facilities and radiograms received by him are followed with interest by the passengers.

5. Regulations regarding safety in operation for both passengers and crew are rigidly enforced. These regulations include:

- A. Thorough ground inspection of both plane and motors prior to and subsequent to each trip. Motors are completely overhauled at the end of 250 flying hours.
- B. Each airplane to carry a crew of four, two pilots, a radio operator and a steward.
- C. The radio operator to be in constant communication with at least two ground stations and usually three.
- D. The airplane to be loaded at a stipulated capacity far below the load-rating given by the manufacturer of the plane. (This

been previously warned up in the hangar. Departure notice is given and the passengers emerge from the station under a covered runway. They board the plane in the same manner as if they were boarding a passenger train or steamship.

4. A steward finds seats for the passengers and sees that all remain seated until the airplane is 1000 feet or more in the air. This is done without the passengers knowing. During the flight, the steward supplies refreshments, describes views and answers such questions. The radio operator of the plane is in constant contact with ground facilities and radiograms received by him are followed with interest by the passengers.

5. Regulations regarding safety in operation for both passengers and crew are strictly enforced. These regulations include:

- A. Thorough ground inspection of both plane and motors prior to and subsequent to each trip. Motors are completely overhauled at the end of 250 flying hours.
- B. Each airplane to carry a crew of four, two pilots, a radio operator and a steward.
- C. The radio operator to be in constant communication with at least two ground stations and usually three.
- D. The airplane to be loaded at a stipulated capacity far below the load-carrying given by the manufacturer of the plane. (This

regulation gives an engine reserve under normal flying conditions and makes certain that flight can be maintained on a single engine.)

The observations of a general passenger manager employed by the Pan American Airways System disclose the following facts:⁽¹⁾

1. The Latin American takes to the air with less resistance than the United States American.
2. About equal percentages of men and women travel by air.
3. Passengers are of all ages, including children down to small infants.
4. Although the fares for air-travel are higher than those for surface transportation, business men figure that, other savings considered, it works out to be cheaper.
5. Confidence in air travel has been established in the minds of many persons visiting the airports and observing the regularity of schedule, the attitude of arriving passengers, and the facilities for caring for passengers and equipment.

The Pan American Airways System began their international air transport operations on October 19, 1927, with a route from Miami, Florida to Havana, Cuba. Through seven years of remarkable progress of applying air service to the needs of industry and commerce, it has extended its lines through Mexico, Central and South America. It has carried more than 250,000 passengers more than 80,000,000 miles and has transported over 12,000,000 pounds of mail

⁽¹⁾Aviation's Place in Tomorrow's Business-Earl Reeves, Page 130.

regulation gives an engine reserve under normal flying conditions and makes certain that flight can be maintained on a single engine.

The observations of a general passenger manager employed by the Pan American Airways System disclose the following facts:

1. The Latin American takes to the air with less resistance than the United States American.
2. About equal percentages of men and women travel by air.
3. Passengers are of all ages, including children down to small infants.
4. Although the fares for air-travel are higher than those for surface transportation, business men figure that other savings considered, it works out to be cheaper.
5. Confidence in air travel has been established in the minds of many persons visiting the airports and observing the regularity of schedule, the attitude of arriving passengers, and the facilities for caring for passengers and equipment.

The Pan American Airways System began their international air transport operations on October 19, 1927, with a route from Miami, Florida to Havana, Cuba. Through seven years of remarkable progress of supplying air service to the needs of industry and commerce, it has extended its lines through Mexico, Central and South America. It has carried more than 250,000 passengers more than 80,000,000 miles and has transported over 12,000,000 pounds of mail.

and cargo between the United States and the West Indies, Central and South America.

Attempts and Proposals of Leading Nations of the World to Establish Trans-oceanic Air Transport

¹"The airplane promises much as a competitor of the steamship for short distances and as a competitor of the railroad over longer distances where intermediate stops can be made." This statement seems to eliminate the airplane from trans-oceanic traffic, but if the plans of the leading countries materialize ocean air travel will be a reality, and the statement will not hold true. Various attempts and proposals have been made by the leading countries of the world to develop a trans-oceanic service by air. Up to the present time, however, there has been very little actual performance in connection with such work. The nations actively engaged in trying to solve this problem are: Germany, Great Britain and the United States.

Credit for actual performance goes to the German Lufthansa Company because of its successful experiments in operating a trans-oceanic air mail service between Africa and South America.⁽²⁾ The experiment consisted of placing the steamship Westphalen in mid-atlantic to act as a way station for the trans-atlantic airship. Upon reaching the Westphalen, the airship was lifted aboard, refueled, and catapulted into the sea to resume her journey to South America. A landing

¹Transport Aviation-Archibald Black, Page 6.

⁽²⁾The Boston Transcript-October 29, 1934.

and cargo between the United States and the West Indies,
Central and South America.

Attempts and Proposals of Landing Stations

of the world to establish trans-oceanic air transport

"The airplane promises much as a competitor of

the steamship for short distances and as a competitor of

the railroad over longer distances where intermediate

stops can be made." This statement seems to eliminate the

airplane from trans-oceanic traffic, but if the plans of

the leading countries materialize ocean air travel will be

a reality, and the statement will not hold true. Various

attempts and proposals have been made by the leading coun-

tries of the world to develop a trans-oceanic service by

air. Up to the present time, however, there has been very

little actual performance in connection with such work.

The nations actively engaged in trying to solve this problem

are: Germany, Great Britain and the United States.

Credit for actual performance goes to the German

Zeppelin Company because of their successful experiments

in operating a trans-oceanic air mail service between Africa

and South America. The experiment consisted of placing the

steamship westward in mid-Atlantic to act as a way station

for the trans-Atlantic airship. Upon reaching the steamer,

the airship was lifted aboard, refueled, and catapulted into

the sea to resume her journey to South America. A landing

device, the key to the success of the experiments, worked perfectly in the four ocean flights made as experiments in July, 1933. This device consists of a canvas, fifty-two by twenty-six feet, reinforced by wooden strips, and with long slats underneath to assure stability. Upon receiving the plane, the Westphalen headed into the wind, letting out the canvas drag-sail behind. The flying boat, alighting on the open sea, timed its descent to hit the tops of a wave close to the canvas. Since February, 1934, the Lufthansa Company has made twenty-two flights across the Atlantic on regular schedule. They transported on an average of 20,000 letters each trip. In October, 1934, a second mid-ocean refueling station and launching platform was put into service. This will make possible weekly air mail service to South America. The new station is the remodeled motorship Schwabenland. While the Westphalen must keep up steam and therefore consume fuel constantly to be ready for operation, the new motorship has the advantage of using her power only when needed. Another advantage of the Schwabenland over the Westphalen is that the catapult is much nearer the surface of the water, enabling heavily-laden planes to make a much smoother take-off.

Officials of the German line are confident that they can establish an air line from Berlin to Rio de Janeiro, cutting the time down to fifty hours or thereabout. In order to accomplish this, however, night flying will have to be instituted along the African coast and faster flying boats introduced into the service.

device, the key to the success of the experiment, worked perfectly in the four ocean flights made as experiments in July, 1934. This device consists of a canvas, fifty-two by twenty-six feet, reinforced by woven strips, and with large slats underneath to assure stability. Upon receiving the plane, the Westphalians headed into the wind, letting out the canvas drag-sail behind. The flying boat, alighting on the open sea, tilted its descent to hit the tops of a wave close to the canvas. Since February, 1934, the Lufthansa Company has made twenty-two flights across the Atlantic on regular schedule. They transported on an average of 20,000 letters each trip. In October, 1934, a second mid-ocean refueling station and launching platform was put into service. This will make possible weekly air mail service to South America. The new station is the re-modeled, motorship Schwabenland. While the Westphalians must keep up steam and therefore consume fuel constantly to be ready for operation, the new motorship has the advantage of using her power only when needed. Another advantage of the Schwabenland over the Westphalian is that the latter is much heavier the surface of the water, making heavy-laden planes to make a much smoother take-off.

Officials of the German line are confident that they can establish an air line from Berlin to Rio de Janeiro, cutting the time down to fifty hours or thereabouts. In order to accomplish this, however, night flying will have to be instituted along the African coast and faster flying boats introduced into the service.

Because of trade relations with the countries of South America, both the German and French governments have established air lines there. Mails are transported by air from France to Dakar, Africa, carried across the Atlantic Ocean by naval vessels to Natal, Brazil, from which point they are run by the subsidiary air line to points along the east coast of South America. The Scadta Airways System, a subsidiary of the German Lufthansa line, operates from Maracaibo, Venezuela along the Colombian coast to Tumaco, Colombia. An inland route operates from Buenaventura, Colombia to Bogota to Barranquilla. The French have made no effort to establish an all-air route to South America.

The Imperial Airways of Great Britain has made a great deal of research in planning a trans-atlantic plane service. This company is cooperating with the British Air Ministry in making plans for the construction of aircraft which, they believe, will meet the requirements of trans-Atlantic service. Up to the present time, however, no actual tests have been made.

The Department of Commerce of the United States, through the Bureau of Air Commerce, has recommended that funds of the Public Works Administration be made available to the Bureau for the establishment of a trans-Atlantic airway by employment of refueling bases or seadromes.⁽¹⁾ Officials of the Bureau of Air Commerce believe that a high-speed, heavier-than-air service between Europe and the United States is inevitable. The employment of P.W.A. funds for this project would not only foster employment, but also would give to the United States an opportunity to own and

⁽¹⁾U.S. Dept. of Commerce-Record of Accomplishments of the Aeronautics Branch for year 1934, Page 5.

Because of trade relations with the countries of South America, both the German and French governments have established air lines there. Mail is transported by air from France to India, Africa, carried across the Atlantic Ocean by naval vessels to West Africa, from which point they are run by the subsidiary air line to points along the east coast of South America. The German Airways System, a subsidiary of the German Luftwaffe line, operates from Caracas, Venezuela along the Colombian coast to Panama, Colombia, an inland route operates from Medellin, Colombia to Bogotá to Barranquilla. The French have made no effort to establish an air route to South America. The Imperial Airways of Great Britain has made a great deal of research in planning a trans-Atlantic plane service. This company is cooperating with the British Air Ministry in making plans for the construction of aircraft which, they believe, will meet the requirements of trans-Atlantic service. Up to the present time, however, no actual tests have been made.

The Department of Commerce of the United States, through the Bureau of Air Commerce, has recommended that funds of the Public Works Administration be made available to the Bureau for the establishment of a trans-Atlantic airway by employment of retaining bases or aerodromes. Officials of the Bureau of Air Commerce believe that a high speed, heavier-than-air service between Europe and the United States is inevitable. The employment of P. W. A. funds for this project would not only foster employment, but also would give to the United States an opportunity to own and

operate the airway for the equal use of all nations. The project would be self-supporting and would solve the problems of trans-oceanic flight.

Plans for the proposed seadromes have been submitted to the Public Works Administrator, Harold Ickes, by the Seadrome Ocean Dock Corporation.⁽¹⁾ The materials to be used in the proposed seadrome would be mainly steel, iron and concrete. A landing deck would be built one-hundred feet above the waterline. This height, the promoters say, would allow rising waves, due to storms, to pass through supporting columns without breaking or pressing any impact force on the structure. Buoyancy tanks, placed forty feet below the surface of the water, would support the seadromes. A 1500-ton concrete anchor, resting on the bed of the ocean and attached to the seadrome by means of two galvanized steel cables, would prevent it from drifting.

The promoters of the seadrome plan to equip it with service hangars, repair shops, a weather bureau, radio equipment, beacon lights, and up-to-date hotel accommodations. Airplanes crossing the Atlantic regularly would be equipped with two-way radiophone and radio direction indicators of the visual type, enabling them to keep to a straight course from one seadrome to another. A number of seadromes placed at points 450 miles apart and stretching across the Atlantic would make a flight across the Atlantic just as safe as a transcontinental flight. Facilities for refueling, for motor and plane inspection at each of these seadromes would eliminate the necessity of tremendous gas loads and would increase the pay loads for such a journey. Another

⁽¹⁾Uncle Sam's Diary-Volume III, #4, Page 8.

operate the airway for the equal use of all nations. The project would be self-supporting and would solve the problems of trans-oceanic flight.

Plans for the proposed airway have been submitted to the Public Works Administration, Harold Lewis,

by the Seaboard Coast Line Corporation. The materials to be used in the proposed airway would be mainly steel,

iron and concrete. A landing deck would be built one-third of a mile above the waterline. This height, the promoters say, would allow rising waves, due to storms, to pass

through supporting columns without breaking or pressing any impact force on the structure. Buoyancy tanks, placed forty feet below the surface of the water, would support

the structure. A 1500-ton concrete anchor, resting on the bed of the ocean and attached to the structure by means of

two galvanized steel cables, would prevent it from drifting. The promoters of the seaborne plan to equip it

with service hangars, repair shops, a weather bureau, radio equipment, beacon lights, and up-to-date hotel accommodations.

Aluminum crossbeams the Atlantic regularly would be equipped with two-way radiophone and radio direction indicators

of the visual type, enabling them to keep to a straight course from one seaborne to another. A number of seaborne

placed at points 450 miles apart and stretching across the Atlantic would make a link across the Atlantic just as

safe as a transcontinental flight. Facilities for refueling for motor and plane inspection at each of these seaborne

would eliminate the necessity of tremendous gas loads and would increase the pay loads for such a journey. Another

advantage, claimed by the experts promoting this project, is that if weather conditions prevent further flight, the airplane may remain safely at a seadrome until it is safe to resume the journey.

The Public Works Administration now has the matter under consideration. If approval is given, together with the desired financial assistance, the project would be completed within two and one-half years after it is started.

As in the case of Great Britain, no actual tests of this American attempt to provide trans-oceanic air travel have been made. The Seadrome Ocean Dock Corporation has asked for a loan of \$30,000,000.00 to finance the work, which at the very beginning produces a problem of cost.

Spectacular events in aviation are continually happening. Since the beginning of this writing, three important flights have occurred. These events have greatly increased both governmental and public interest in international aviation and trans-oceanic flight. The World's biggest air race occurred on October 20, 1934 when twenty planes took off from Mildenhall Airdrome, England, with Melbourne, Australia, their goal.⁽¹⁾ Representatives of seven Nations were competing in the great race. Most of the entries were British. The other nations represented were the United States, Holland, Norway, Australia, New Zealand and New Guinea. The immediate goal of the aviators entered in the great race was the large money prizes offered to the winners. Aviation and commercial interests of the Nations represented however, were watching the great flight to see whose make of airplane would fly the fastest, the cheapest

⁽¹⁾The Boston Globe-October 20, 1934.

...claimed by the experts promoting this project,
is that if weather conditions prevent further flight, the
airplane may remain safely as a seaplane until it is able
to resume the journey.

The Public Works Administration now has the matter
under consideration. If approval is given, together with the
desired financial assistance, the project would be completed
within two and one-half years after it is started.

As in the case of Great Britain, no actual basis
of this American attempt to provide trans-oceanic air travel
have been made. The Hawaiian Ocean Dock Corporation has
asked for a loan of \$50,000,000.00 to finance the work, which
at the very beginning produces a problem of cost.

Spectacular events in aviation are constantly
happening. Since the beginning of this century, when
important flights have occurred. These events have greatly
increased both governmental and public interest in interna-
tional aviation and trans-oceanic flight. The world's
highest air race occurred on October 20, 1934 when twenty
planes took off from Alibonham Airbase, England, with
Malabar, Australia, their goal. (4) Representatives of seven
nations were competing in the great race. Most of the
entries were British. The other nations represented were
the United States, Holland, Norway, Australia, New Zealand
and New Guinea. The immediate goal of the aviators entered
in the great race was the large money prize offered to the
winners. Aviation and commercial interests of the nations
represented however, were watching the great flight to see
whose name of airplane would fly the fastest. The champion

and the safest. The race was of special significance to the British Empire, whose commercial leaders see the urgent need of airtransport development throughout her possessions. The course of the flight was so chosen that a successful plane would pass over three continents without once making a landing outside the influence of the British Empire. The first stopping place in the 11,323 mile journey was the city of Bagdad, in the Kingdom of Iraq, a nation established under the guidance of the British. From Bagdad the planes flew to Allahabad, British India. Their next stop, Singapore, capital of Straits Settlements and also under British rule is at this time the site of a strong naval base of the British. From Singapore the course continued on to Darwin, Australia, thence to Melbourne, the goal. Airplanes of British and American manufacture captured all the prizes in the speed and handicap events of the race. The winners, their planes, their officially corrected times, and their prizes follow:

Speed Race⁽¹⁾

First - C.W.A. Scott and T. Campbell Slack of England, De Haviland plane, time-70 hours, 54 minutes, 18 seconds.

Prize \$50,000.00 and a \$2,500.00 gold cup.

Second - Colonel Roscoe Turner and Clyde Pangborn of the United States, flying a Boeing Transport plane, time-92 hours, 55 minutes, 38 seconds, and prize \$7,500.00.

Third - Cathcart Jones and Ken Waller of England, flying a De Haviland plane, time 108 hours, 13 minutes, 45 seconds, prize \$2,500.00.

(1)The Boston Globe-October 20, 1934.

and the aircraft. The race was of special significance to the British Empire, whose commercial leaders use the present need of airtransport development throughout her possessions. The course of the flight was so chosen that a successful plane would pass over three continents without once making a landing outside the influence of the British Empire. The first stopping place in the 11,325 mile journey was the city of Bagdad, in the Kingdom of Iraq, a nation established under the guidance of the British. From Bagdad the planes flew to Alahabad, British India. Their next stop, Singapore, capital of British Settlements and also under British rule. At this time the site of a strong naval base of the British. From Singapore the route continued on to Darwin, Australia, thence to Melbourne, the goal. Alliances of British and American manufacturers captured all the prizes in the speed and handicap events of the race. The winners, their prizes, and their officially corrected times, and their prizes follow:

Speed Handicap

First - G.W. Scott and T. Campbell Black of England, in Haviland plane, time 70 hours, 54 minutes, 18 seconds. Prize \$50,000.00 and a \$25,000.00 gold cup.

Second - Colonel Ross Turner and Clyde Lamborn of the United States, flying a Boeing Transport plane, time 92 hours, 55 minutes, 53 seconds, and prize \$7,500.00.

Third - Captain Jones and Max Walker of England, flying a De Haviland plane, time 108 hours, 15 minutes, 45 seconds. Prize \$3,500.00.

Handicap Race

First - K. D. Parmentier and J. J. Moll of the Netherlands, using a Douglas transport plane, time, 76 hours, 38 minutes, 12 seconds, and prize \$10,000.00

Second - C. J. Melrose of Australia, flying a De Haviland plane, time 79 hours, 19 minutes, 50 seconds, prize \$5,000.

Nine of the planes which started from Mildenhall on October 20th reached their final destination. Three others were still in the race as the time period expired.

An interesting comparison is made between the time established in this race and the time for steamship travel from London to Melbourne. Vessels plying between London and Melbourne take at least thirty-eight days to make the trip while the air route record established is two days, four hours, and twenty-two minutes. The steamship service is the fastest from London. A line from Liverpool, England allows forty-five days for its fastest vessels and ships from Southampton, England are held to an established run of thirty-seven days.

On October 20, 1934, the day that marked the start of the great Melbourne air race, another plane left Brisbane, Australia bound for Oakland, California, 7365 miles away.⁽¹⁾ The plane was piloted by Sir Charles Kingsford-Smith, Australian airman. He was accompanied by Captain T. G. Taylor, who acted as navigator. The first stop on this long distance flight was at Suva, Figi Islands, a distance of 1760 miles. The flyers remained at this point for a week because of weather conditions. On October 28th

(1) The Boston Globe-October 20, 1934, November 5, 1934.

Handicap Race

First - K. G. Parmenter and A. J. Wolf of the Netherlands, using a Douglas transport plane, time, 78 hours, 38 minutes,

12 seconds, and prize \$10,000.00.

Second - C. J. Mearns of Australia, flying a de Havilland plane, time 79 hours, 19 minutes, 50 seconds, prize \$5,000.

None of the planes which started from Middlesbrough

on October 28th reached their final destination. Three

others were still in the race at the time period expired.

An interesting comparison is made between the

time established in this race and the time for steamship

travel from London to Melbourne. Vessels plying between

London and Melbourne take at least thirty-eight days to

make the trip while the air route record established is

two days, four hours, and twenty-two minutes. The steam-

ship service is the fastest from London. A line from

Liverpool, England, allows forty-five days for its fastest

vessels and ships from Southampton, England and held to an

established run of thirty-seven days.

On October 28, 1934, the day that marked the

start of the great Melbourne air race, another plane left

Rippon, Australia bound for Oakland, California, 7365

miles away. The plane was piloted by Sir Charles Kingsford-

Smith, Australian aviator. He was accompanied by Captain

T. G. Taylor, who acted as navigator. The first stop on

this long distance flight was at Suva, Fiji Islands, a

distance of 1750 miles. The flyers remained at this point

for a week because of weather conditions. On October 28th

(4) The Boston Globe-October 28, 1934, November 2, 1934.

they resumed their journey, flying to Honolulu, Hawaii, 3,197 miles arriving there the next afternoon. On November 3rd, they started for Oakland, California, a route never flown before. They arrived at the Oakland Municipal Airport on November 4th, covering a distance of 2408 miles in fourteen hours, and fifty-nine minutes. The actual flying time from Brisbane, Australia to Oakland, California, a distance of 7365 miles, was fifty-four hours, and forty-nine minutes. On a previous flight in 1928 from Oakland to Sydney, Australia, Smith travelled 7800 miles in eighty-nine hours.

The third spectacular flight occurred in January of this year, when Mrs. Amelia Earhart Putnam, made a successful solo flight from Honolulu, Hawaii to California.⁽¹⁾

It is because of the success of these trans-oceanic flights and of others completed in the past, that leading nations of the world are forming definite plans for the creation of regular air-transport services across the Atlantic and Pacific Oceans.

(1) The Boston Globe, January 19, 1935.

they resumed their journey, flying to Honolulu, Hawaii, 4,187 miles arriving there the next afternoon. On November 2nd they started for Oakland, California, a route never flown before. They arrived at the Oakland Municipal Airport on November 13th, covering a distance of 2,405 miles in fourteen hours, and fifty-nine minutes. The actual flying time from Honolulu, California to Oakland, California, a distance of 1,985 miles, was fifty-four hours, and forty-nine minutes. On a previous flight in 1938 from Oakland to Hawaii, and back, which traveled 7,800 miles in fifty-nine hours. The third spectacular flight occurred in January of this year, when Mrs. Amelia Earhart returned, made a successful solo flight from Honolulu, Hawaii to California. It is because of the success of these trans-oceanic flights and of others completed in the past, that leading nations of the world are formulating definite plans for the creation of regular air-transport services across the Atlantic and Pacific Oceans.

(c) The Boston Globe, January 19, 1933.

Summary

At the beginning of this work, the expressed aim was to show: first, the growth of international air transportation from the United States; second, the reasons for this growth; third, the need of a further development of it. Before reaching any conclusions on any of the three aims in mind, it was deemed essential to trace the growth of air transportation in general from its date of origin. This method of approach has served its purpose by unfolding a series of events in the rapid rise of aviation from the days of gliding experiments to the multi-motored air-transport of today.

In a somewhat detailed account of some of the principal events in the early growth of aviation, full credit was given to the pioneers of flight. These men, a few in number, persistently experimented until their combined efforts culminated in successful flight. The attitude of the general public toward aviation in the early stages of its development was one of indifference. How this attitude changed in the following years to one of real interest and encouragement is brought out in reviewing the rise of aviation. The effect of the World War in arousing public interest in the possibilities of aviation by creating an army of pilots and a surplus of aviation materials is also described. The establishment of regular air mail service by the United States Post Office Department in the summer of 1918 marked the beginning of a real effort on the part of the Government to foster the

Summary

At the beginning of this work, the experiment was to show: first, the growth of international air transportation from the United States; second, the reasons for this growth; third, the need of a further development of it. Before reaching any conclusions or any of the above aims in mind, it was deemed essential to trace the growth of air transportation in general from its date of origin. This method of approach has served for purpose by unfolding a series of events in the rapid rise of aviation from the days of gliding experiments to the multi-engine aircraft of today.

In a somewhat detailed account of some of the principal events in the early growth of aviation, this credit was given to the pioneers of flight. These men, few in number, persistently experimented until their combined efforts culminated in successful flight. The early end of the general public's interest in aviation in the early stages of its development was one of indifference. This attitude changed in the following years to one of real interest and encouragement is brought out in reviewing the rise of aviation. The effect of the World War in arousing public interest in the possibilities of aviation by creating an army of pilots and a surplus of aviation material is also described. The establishment of regular air mail service by the United States Post Office Department in the summer of 1918 marked the beginning of a real effort on the part of the Government to foster the

development of this new form of transport. This effort of the Government was further emphasized by the passage of the Air Commerce Act of 1926. This Act definitely established aviation as an industry. The law has been reviewed for the purpose of showing the policy of the United States in regard to the development of air transportation. The enforcement of its regulations and the adoption of its many aids has resulted in world leadership in air transport. In order to maintain this position of high quality air transport, however, the aid of the government must not only be in the form of laws and regulations, but must consist of financial assistance as well.

The development of international air transport routes from the United States is comparatively new. A real effort to extend our lines into foreign countries started in 1928. In the six years that have elapsed, tremendous strides have been made in the establishment of routes to Mexico, the West Indies, Central and South America. This service should be continued because it performs a useful service to American commerce. The possibilities of increased commerce between the United States and these southern countries are very favorable at this time. Negotiations between our State Department and some of the Republics of South America have resulted in reciprocal trade agreements being signed. It should be the policy of the United States to expand our air transport services now existing in these countries if expansion become necessary.

It is of equal importance to the United States

development of this new form of transport. The effect of the Government was further emphasized by the passage of the Air Commerce Act of 1926. This Act definitely established aviation as an industry. The Act has been reviewed for the purpose of showing the policy of the United States in regard to the development of air transportation. The purpose of the transportation and the adoption of the new mode has resulted in world leadership in air transport. In order to maintain this position of high quality air transport, however, the aid of the Government must not only be in the form of laws and regulations, but must consist of financial assistance as well.

The development of international air transport routes from the United States is comparatively new. The first effort to extend our lines into foreign countries started in 1928. In the six years that have elapsed, tremendous strides have been made in the establishment of routes to Mexico, the West Indies, Central and South America. This service should be continued because it performs a useful service to our own commerce. The possibilities of increased commerce between the United States and these southern countries are very favorable at this time. Relations between our States Government and some of the Republics of Latin America have resulted in reciprocal trade agreements being signed. It should be the policy of the United States to expand our air transport services now existing in these countries if expansion becomes necessary. It is of equal importance to the United States

to maintain air transport operations to other parts of the world. In this connection, every effort should be made to aid in the creation of trans-oceanic air services. Improvements in aircraft design and increased capacities of their motive power seem to indicate that service by airplane across both the Atlantic and Pacific Oceans is approaching reality.

to maintain air transport operations to other parts of the world. In this connection, every effort should be made to aid in the creation of trans-oceanic air services. Improvements in aircraft design and increased capacities of their motive power seem to indicate that service by airplane across both the Atlantic and Pacific oceans is approaching reality.

*Consolidated Statement of Scheduled Foreign Air Transport Operations Statistics for the

Calendar Year 1931

Appendix A.

Routes Operated	Mos. oper- ated	Miles Flown	Pass. car- ried	Exp. lbs.	Mail lbs.	Mail pay- ments	Passenger miles
Seattle-Juneau	8½	91,862	455	0	0	0	288,167
Seattle-Victoria	5	18,480	470	0	0	0	33,110
Victoria to Vancouver	3	12,460	532	0	0	0	37,940
Seattle to Vancouver	5	52,470	843	0	0	0	124,420
New York-Montreal	12	103,293	79	2,387	(2)	(2)	19,282
Aqua Caliente-Los							
Angeles via San Diego	12	201,352	11,562	39,710	0	0	862,753
New Orleans-Pilottown	12	53,164	0	0	(2)	(2)	0
Miami-Habana	12	3,054,337	33,800	310,140	(2)	(2)	10,356,593
Miami-Nassau	6	(1)	(1)	(1)	(2)	(2)	(1)
Miami-Cristobal via		(1)	(1)	(1)	(2)	(2)	(1)
Kingston	12			(1)			
Mexico City-Brownsville							
via Tampico	12	(1)	(1)	(1)	(2)	(2)	(1)
Miami-Buenos Aires	12	(1)	(1)	(1)	(2)	(2)	(1)
Cristobal-Port of Spain	12	(1)	(1)	(1)	(2)	(2)	(1)
Brownsville-Cristobal	12	(1)	(1)	(1)	(2)	(2)	(1)
Vera Cruz-Merida	12	(1)	(1)	(1)	(2)	(2)	(1)
Bangor-Halifax	2	(1)	(1)	(1)	(2)	(2)	(1)
Cristobal-Montevideo,							
Uruguay via San.Chile	12	1,021,132	4,545	1,052	(2)	(2)	1,797,667
Seattle-Victoria	12	22,020	78	0	(2)	(2)	6,270
Mail pounds and mail paym'ts for all foreign air mail operators							
					(3) 545,800	(3) 6,983,792.33	
Total		4,630,570	52,364	363,289	545,800	6,983,792.33	13,526,202

(1) Included in above total.

(2) Mail carried or revenue to contractors on individual foreign mail routes not available

(3) Does not include mail carried or revenue from mail carried under contract with other governments.

*United States Department of Commerce-Air Commerce Bulletin, Volume 3, No.21, Page 535.

*Consolidated Statement of Scheduled Foreign Air Transport Operations Statistics for the
Calendar Year 1932

Routes Operated	Mos. oper- ated	Miles Flown	Pass. car- ried	Exp. lbs.	Mail lbs.	Mail pay- ments	Passenger miles
New York to Montreal	12	175,937	1,355	43,706	(2)	(2)	388,770
Agua Caliente to Los Angeles via San Diego	12	309,254	12,713	17,439	0	0	1,333,918
Pilottown to New Orleans	12	51,720	0	0	(2)	(2)	0
Miami to Havana	12	3,587,008	43,994	467,174	(2)	(2)	14,264,235
Brownsville to Cristobal via Mexico City	12	(1)	(1)	(1)	(2)	(2)	(1)
Miami to Cristobal via Barranquilla	12	(1)	(1)	(1)	(2)	(2)	(1)
Miami to Cristobal via Central America	12	(1)	(1)	(1)	(2)	(2)	(1)
Barranquilla to Port of Spain	12	(1)	(1)	(1)	(2)	(2)	(1)
Miami to Buenos Aires via San Juan, Port of Spain and Rio de Janeiro	12	(1)	(1)	(1)	(2)	(2)	(1)
Miami to Nassau	12	(1)	(1)	(1)	(2)	(2)	(1)
Vera Cruz to Merida	12	(1)	(1)	(1)	0	0	(1)
Cristobal to Medelin	12	(1)	(1)	(1)	0	0	(1)
Havana to Baracoa	11	(1)	(1)	(1)	0	0	(1)
Cristobal to Montevideo via Santiago, Chile	12	1,143,183	7,933	38,532	(2)	(2)	3,521,670
Seattle to Vancouver	14	39,337	407	0	0	0	55,196
Seattle to Victoria	12	20,174	0	0	(2)	(2)	0
Mail pounds and mail payments for all foreign air-mail operators							
					515,466	6,939,989.11	-----
Total		5,326,613	66,402	566,951	515,466	6,939,989.11	19,513,789

(1) Included in above total.

(2) Mail carried or revenue to contractors on individual mail routes not available.

(3) Does not include mail carried or revenue from mail carried under contract with other governments.

*United States Department of Commerce, Air Commerce Bulletin Volume 4, #19, Pages 475-6.

Appendix C

*Consolidated Statement of Scheduled Foreign Air Transport Operations Statistics for the
Calendar Year 1933

Routes Operated	Mos. Oper- ated	Miles Flown	Pass. car- ried	Exp. lbs.	Mail lbs.	Mail pay- ments	Passenger miles
New York to Montreal	12	158,462	1,297	43,751	(2)	(2)	291,721
Agua Caliente to Los An- geles via San Diego	12	232,255	6,911	68,308	0	0	804,092
New Orleans to Pilotstown	12	36,880	0	0	(2)	(2)	0
Pembina to Winnipeg	8	33,263	459	108	0	0	60,108
Miami to Havana	12	4,229,311	56,898	727,027	(2)	(2)	19,643,319
Miami to Buenos Aires	12	(1)	(1)	(1)	(2)	(2)	(1)
Miami to Cristobal	12	(1)	(1)	(1)	(2)	(2)	(1)
Cristobal to Trinidad	12	(1)	(1)	(1)	(2)	(2)	(1)
Brownsville to Mexico City	12	(1)	(1)	(1)	(2)	(2)	(1)
Brownsville to Cristobal	12	(1)	(1)	(1)	(2)	(2)	(1)
Vera Cruz to Merida	12	(1)	(1)	(1)	(2)	(2)	(1)
Cristobal to Medellin	12	(1)	(1)	(1)	(2)	(2)	(1)
Territory to Alaska	6	(1)	(1)	(1)	(2)	(2)	(1)
Cristobal to Montevideo, Ur- uguay via Santiago, Chile	12	1,160,128	10,234	103,403	(2)	(2)	4,508,720
Seattle to Victoria	12	20,693	0	0	(2)	(2)	0
Mail pound and mail payments for all foreign air mail operators.							
Total					454,352	6,946,474.76	25,307,960

- (1) Included in above total
 (2) Mail carried or revenue to contractors on individual mail routes not available.
 (3) Does not include mail carried or revenue from mail carried under contract with
 other governments.

* United States Department of Commerce, Air Commerce Bulletin Volume 6, Number 1,
 Pages 9 and 10.

Appendix D

*Scheduled Foreign Air Transport Operations Statistics for the Period January-June 1934

Routes Operated	Mos. Oper- ated	Miles Flown	Pass. car- ried	Exp. lbs.	Passenger miles
New York to Montreal	6	93,602	593	26,805	141,322
Boston to Montreal	4	62,136	1,417	128	226,123
Pembina to Winnipeg	2½	9,723	54	101	6,813
Miami to Habana	6	2,942,136	42,017	534,685	14,729,908
Miami to Buenos Aires	6	(1)	(1)	(1)	(1)
Miami to Cristobal	6	(1)	(1)	(1)	(1)
Cristobal to Trinidad	6	(1)	(1)	(1)	(1)
Nogales to Mazatlan	6	(1)	(1)	(1)	(1)
Brownsville to Mexico City	6	(1)	(1)	(1)	(1)
Brownsville to Cristobal	6	(1)	(1)	(1)	(1)
Vera Cruz to Merido	6	(1)	(1)	(1)	(1)
Cristobal to Medellin	6	(1)	(1)	(1)	(1)
El Paso to Mexico City	6	(1)	(1)	(1)	(1)
Los Angeles to Mexico City	4	(1)	(1)	(1)	(1)
Territory of Alaska	6	(1)	(1)	(1)	(1)
Cristobal, Canal Zone to Monte- video, Uruguay, via Santiago, Chile	6	661,246	6,603	95,232	3,177,971
Seattle to Victoria	6	11,100	0	0	0
New Orleans to Pilotstown	6	14,050	0	0	0
Total foreign routes		3,793,993	50,684	656,951	18,282,137

(1) Included in above total.

* United States Department of Commerce, Air Commerce Bulletin, Volume 6, Number 3,
Page 53.

Appendix E

*Progress of Civil Aeronautics in the United States
Scheduled Foreign Air Transport Operations for Period 1926 to 1929

	1926	1927	1928	1929
Total airway mileage	152	257	1,077	11,456
Express and freight carried (pounds)	0	0	6,240	7,809
Mail:				
Carried by contractors (pounds)	107,535	204,801	517,648	672,433
Income to contractors	\$55,507.	\$82,186.	\$227,412.	\$3,168,907
Miles flown	59,316	90,626	273,211	2,761,479
Operators, number of	2	3	5	6
Passenger-miles flown (1 passenger carried 1 mile)	-	-	-	-
Passengers carried	0	18	1,873	13,654

*United States Department of Commerce, Bureau of Air Commerce - Bulletin Number 1,
"Civil Aeronautics in the United States" - Pages 4 and 5.

Appendix 2

1. The following information is being furnished to you for your information and is not to be used for any other purpose.

Passenger name	Room	Age	Sex	Religion	Occupation	Remarks
Mr. J. H. Smith	101	45	M	Protestant	Engineer	
Mr. W. B. Jones	102	52	M	Catholic	Teacher	
Mr. R. L. Brown	103	38	M	Jewish	Lawyer	
Mr. S. D. White	104	60	M	Methodist	Farmer	
Mr. T. E. Green	105	42	M	Buddhist	Doctor	
Mr. P. M. Black	106	55	M	Muslim	Merchant	
Mr. Q. N. Grey	107	35	M	Hindu	Student	
Mr. U. V. Blue	108	48	M	Sikh	Engineer	
Mr. X. Y. Red	109	50	M	Buddhist	Teacher	
Mr. Z. A. Purple	110	40	M	Jewish	Lawyer	
Mr. B. C. Yellow	111	55	M	Methodist	Farmer	
Mr. F. G. Orange	112	30	M	Buddhist	Student	
Mr. H. I. Green	113	45	M	Sikh	Engineer	
Mr. J. K. Blue	114	50	M	Buddhist	Teacher	
Mr. L. M. Red	115	40	M	Jewish	Lawyer	
Mr. N. O. Purple	116	55	M	Methodist	Farmer	
Mr. P. Q. Yellow	117	30	M	Buddhist	Student	
Mr. R. S. Orange	118	45	M	Sikh	Engineer	
Mr. T. U. Green	119	50	M	Buddhist	Teacher	
Mr. V. W. Blue	120	40	M	Jewish	Lawyer	
Mr. X. Y. Red	121	55	M	Methodist	Farmer	
Mr. Z. A. Purple	122	30	M	Buddhist	Student	
Mr. B. C. Yellow	123	45	M	Sikh	Engineer	
Mr. F. G. Orange	124	50	M	Buddhist	Teacher	
Mr. H. I. Green	125	40	M	Jewish	Lawyer	
Mr. J. K. Blue	126	55	M	Methodist	Farmer	
Mr. L. M. Red	127	30	M	Buddhist	Student	
Mr. N. O. Purple	128	45	M	Sikh	Engineer	
Mr. P. Q. Yellow	129	50	M	Buddhist	Teacher	
Mr. R. S. Orange	130	40	M	Jewish	Lawyer	
Mr. T. U. Green	131	55	M	Methodist	Farmer	
Mr. V. W. Blue	132	30	M	Buddhist	Student	
Mr. X. Y. Red	133	45	M	Sikh	Engineer	
Mr. Z. A. Purple	134	50	M	Buddhist	Teacher	
Mr. B. C. Yellow	135	40	M	Jewish	Lawyer	
Mr. F. G. Orange	136	55	M	Methodist	Farmer	
Mr. H. I. Green	137	30	M	Buddhist	Student	
Mr. J. K. Blue	138	45	M	Sikh	Engineer	
Mr. L. M. Red	139	50	M	Buddhist	Teacher	
Mr. N. O. Purple	140	40	M	Jewish	Lawyer	
Mr. P. Q. Yellow	141	55	M	Methodist	Farmer	
Mr. R. S. Orange	142	30	M	Buddhist	Student	
Mr. T. U. Green	143	45	M	Sikh	Engineer	
Mr. V. W. Blue	144	50	M	Buddhist	Teacher	
Mr. X. Y. Red	145	40	M	Jewish	Lawyer	
Mr. Z. A. Purple	146	55	M	Methodist	Farmer	
Mr. B. C. Yellow	147	30	M	Buddhist	Student	
Mr. F. G. Orange	148	45	M	Sikh	Engineer	
Mr. H. I. Green	149	50	M	Buddhist	Teacher	
Mr. J. K. Blue	150	40	M	Jewish	Lawyer	

2. The following information is being furnished to you for your information and is not to be used for any other purpose.

3. The following information is being furnished to you for your information and is not to be used for any other purpose.

4. The following information is being furnished to you for your information and is not to be used for any other purpose.

5. The following information is being furnished to you for your information and is not to be used for any other purpose.

6. The following information is being furnished to you for your information and is not to be used for any other purpose.

7. The following information is being furnished to you for your information and is not to be used for any other purpose.

8. The following information is being furnished to you for your information and is not to be used for any other purpose.

9. The following information is being furnished to you for your information and is not to be used for any other purpose.

10. The following information is being furnished to you for your information and is not to be used for any other purpose.

Appendix F

*Progress of Civil Aeronautics in the United States
Scheduled Foreign Air Transport Operations for Period 1930 to 1933

	1930	1931	1932	1933
Total airway mileage	19,662	19,948	19,980	19,875
Express and freight carried (pounds)	109,048	363,289	566,851	942,597
Mail:				
Carried by contractors (pounds)	528,665	545,800	515,466	454,352
Income to contractors	\$5,313,313.	\$6,983,792.	\$6,939,989.	\$6,946,475
Miles flown	4,952,569	4,630,570	5,326,613	5,870,992
Operators, number of	7	7	7	6
Passenger-miles flown (1 passenger carried 1 mile)	19,732,677	13,526,202	19,513,789	25,307,960
Passengers carried	42,570	52,364	66,402	75,799

*United States Department of Commerce, Bureau of Air Commerce - Bulletin Number 1,
"Civil Aeronautics in the United States" - Pages 4 and 5.

STATE VERIFICATION IN THE UNITED STATES - Section 1 and 2.
 of the United States Department of Commerce, Bureau of the Census - Statistical Abstract 1921

Verifications collected	45,240	25,224	90,465	12,138
Collected in 1919	18,135,241	14,288,305	18,135,241	32,103,380
Verifications collected in 1919 (1) Verifications				
Verifications collected in 1919	4	4	4	4
Verifications collected in 1919	4,320,240	4,320,240	4,320,240	8,640,480
Income tax collections	12,112,373	48,882,135	48,882,135	12,112,373
Collected by collection (Income)	238,222	242,400	212,422	212,422
Verifications collected in 1919 (Income)	108,048	332,332	242,422	242,422
Verifications collected in 1919	78,928	18,848	18,848	18,848
Verifications collected in 1919	1821	1821	1821	1821

Verifications collected in 1919 (Income) 1821 to 1823

Verifications collected in 1919 (Income) 1821 to 1823

*United States Foreign Air Transport Routes

Routes	Airway miles ¹	Schedule (round trips)	Plane miles scheduled daily average ²	Present Operator	Originally commenced
New York-Montreal	332	MPE Daily	664	American Airlines, Inc.	10/1/28
Burlington, Vt.-Montreal	73	P Daily	146	National Airways, Inc.	
Miami-Habana	229	MPE 3 times weekly	196	Pan American Airways, Inc.	10/19/27
Miami-San Juan	1,180	MPE 3 times weekly	1,046	"	1/9/29
San Juan-Paramaribo	1,378	MPE Weekly	394	"	9/22/29
Paramaribo-Buenos Aires	4,840	MPE Weekly	1,383	"	11/2/31
Miami-Cristobal via San Salvador	2,228	MPE 2 times weekly	1,275	"	2/4/29
Miami-Cristobal via Kingston & Barranquilla	1,810	MPE 2 times weekly	1,034	"	12/2/30
Barranquilla-Port of Spain	1,021	MPE 2 times weekly	584	"	6/21/29

¹Airway miles here given are the air-line distances between cities.

²Plane miles schedules to be flown, averaged on a daily basis.

M-Mail

P-Passengers

E-Express

REGIONAL DEVELOPMENT PLAN FOR THE NORTH REGION

Project Name	Location	Area (sq. km)	Population (est.)	Infrastructure	Notes
1. Road Construction	North Region	1500	120,000	Good	Priority project
2. Water Supply	North Region	800	60,000	Fair	Essential for health
3. Education	North Region	200	15,000	Poor	Need for more schools
4. Health Services	North Region	100	8,000	Very Poor	Urgent need

5/1/01	1. Road Construction	1500	120,000	Good	Priority project
6/1/01	2. Water Supply	800	60,000	Fair	Essential for health
7/1/01	3. Education	200	15,000	Poor	Need for more schools
8/1/01	4. Health Services	100	8,000	Very Poor	Urgent need
9/1/01	5. Road Construction	1500	120,000	Good	Priority project
10/1/01	6. Water Supply	800	60,000	Fair	Essential for health
11/1/01	7. Education	200	15,000	Poor	Need for more schools
12/1/01	8. Health Services	100	8,000	Very Poor	Urgent need
1/1/02	9. Road Construction	1500	120,000	Good	Priority project
2/1/02	10. Water Supply	800	60,000	Fair	Essential for health
3/1/02	11. Education	200	15,000	Poor	Need for more schools
4/1/02	12. Health Services	100	8,000	Very Poor	Urgent need

1. Road Construction: This project aims to improve the road network in the North Region, facilitating trade and transport. It is a high-priority project due to the current state of the roads.

2. Water Supply: This project focuses on providing clean, safe drinking water to the population in the North Region. It is essential for public health and well-being.

3. Education: This project seeks to increase access to quality education for children in the North Region. It involves building new schools and training teachers.

4. Health Services: This project aims to improve the health services available in the North Region. It includes building new health centers and training healthcare workers.

5. Road Construction: This project continues the effort to improve the road network in the North Region, with a focus on connecting remote areas.

6. Water Supply: This project continues the effort to provide clean, safe drinking water to the population in the North Region.

7. Education: This project continues the effort to increase access to quality education for children in the North Region.

8. Health Services: This project continues the effort to improve the health services available in the North Region.

9. Road Construction: This project continues the effort to improve the road network in the North Region.

10. Water Supply: This project continues the effort to provide clean, safe drinking water to the population in the North Region.

11. Education: This project continues the effort to increase access to quality education for children in the North Region.

12. Health Services: This project continues the effort to improve the health services available in the North Region.

*United States Foreign Air Transport Routes
(Continued)

Routes	Airway miles ¹	Ser-vice	Schedule (round trips)	Plane miles sched-uled daily ²	Present Operator	Origh-ally Com-menced
Miami-Massau	188	MPE	2 times weekly	54	Pan American Airways, Inc.	1/2/29
MMiami-Nassau	188	PE	5 times weekly	269	"	"
Brownsville-Mexico City via Tampico	496	MPE	Daily	992	"	3/9/29
Mexico City-San Salvador	951	MPE	2 times weekly	543	"	9/2/29
Kingston-Port-au-Prince	403	PE	Weekly	97	"	"
Port-au-Prince-Santo Domingo	161	PE	Weekly	46	"	"
Veracruz-Merida	530	PE	6 times weekly	454	"	"
Los Angeles-Mexico City	1,684	PE	3 times weekly	1,433	Pan American Airways, Inc. (Aerovias Centrales)	"
El Paso-Durango	663	PE	3 times weekly	568	"	"
Nogales-Mazatlan	665	PE	3 times weekly	570	"	"
Cristobal-Canal Zone to Montevideo, Uruguay via Santiago, Chile	4,552	MPE	2 times weekly	2,548	Pan American Airways Grace	5/18/29

*United States Department of Commerce-Air Commerce Bulletin Volume 6, No. 4, Page 104.

¹Airway miles here given are the air-line distances between cities.

²Plane miles schedules to be flown, averaged on a daily basis.

M-Mail

1. The following information was obtained from the records of the Department of the Interior, Bureau of Land Management, on the subject of the land in question, and is being furnished to you for your information.

Section	Range	County	State	Acres	Owner	Remarks
1/4	10	10	10	10	10	10
2/4	10	10	10	10	10	10
3/4	10	10	10	10	10	10
4/4	10	10	10	10	10	10
5/4	10	10	10	10	10	10
6/4	10	10	10	10	10	10
7/4	10	10	10	10	10	10
8/4	10	10	10	10	10	10
9/4	10	10	10	10	10	10
10/4	10	10	10	10	10	10
11/4	10	10	10	10	10	10
12/4	10	10	10	10	10	10
13/4	10	10	10	10	10	10
14/4	10	10	10	10	10	10
15/4	10	10	10	10	10	10
16/4	10	10	10	10	10	10
17/4	10	10	10	10	10	10
18/4	10	10	10	10	10	10
19/4	10	10	10	10	10	10
20/4	10	10	10	10	10	10
21/4	10	10	10	10	10	10
22/4	10	10	10	10	10	10
23/4	10	10	10	10	10	10
24/4	10	10	10	10	10	10
25/4	10	10	10	10	10	10
26/4	10	10	10	10	10	10
27/4	10	10	10	10	10	10
28/4	10	10	10	10	10	10
29/4	10	10	10	10	10	10
30/4	10	10	10	10	10	10
31/4	10	10	10	10	10	10
32/4	10	10	10	10	10	10
33/4	10	10	10	10	10	10
34/4	10	10	10	10	10	10
35/4	10	10	10	10	10	10
36/4	10	10	10	10	10	10
37/4	10	10	10	10	10	10
38/4	10	10	10	10	10	10
39/4	10	10	10	10	10	10
40/4	10	10	10	10	10	10
41/4	10	10	10	10	10	10
42/4	10	10	10	10	10	10
43/4	10	10	10	10	10	10
44/4	10	10	10	10	10	10
45/4	10	10	10	10	10	10
46/4	10	10	10	10	10	10
47/4	10	10	10	10	10	10
48/4	10	10	10	10	10	10
49/4	10	10	10	10	10	10
50/4	10	10	10	10	10	10
51/4	10	10	10	10	10	10
52/4	10	10	10	10	10	10
53/4	10	10	10	10	10	10
54/4	10	10	10	10	10	10
55/4	10	10	10	10	10	10
56/4	10	10	10	10	10	10
57/4	10	10	10	10	10	10
58/4	10	10	10	10	10	10
59/4	10	10	10	10	10	10
60/4	10	10	10	10	10	10
61/4	10	10	10	10	10	10
62/4	10	10	10	10	10	10
63/4	10	10	10	10	10	10
64/4	10	10	10	10	10	10
65/4	10	10	10	10	10	10
66/4	10	10	10	10	10	10
67/4	10	10	10	10	10	10
68/4	10	10	10	10	10	10
69/4	10	10	10	10	10	10
70/4	10	10	10	10	10	10
71/4	10	10	10	10	10	10
72/4	10	10	10	10	10	10
73/4	10	10	10	10	10	10
74/4	10	10	10	10	10	10
75/4	10	10	10	10	10	10
76/4	10	10	10	10	10	10
77/4	10	10	10	10	10	10
78/4	10	10	10	10	10	10
79/4	10	10	10	10	10	10
80/4	10	10	10	10	10	10
81/4	10	10	10	10	10	10
82/4	10	10	10	10	10	10
83/4	10	10	10	10	10	10
84/4	10	10	10	10	10	10
85/4	10	10	10	10	10	10
86/4	10	10	10	10	10	10
87/4	10	10	10	10	10	10
88/4	10	10	10	10	10	10
89/4	10	10	10	10	10	10
90/4	10	10	10	10	10	10
91/4	10	10	10	10	10	10
92/4	10	10	10	10	10	10
93/4	10	10	10	10	10	10
94/4	10	10	10	10	10	10
95/4	10	10	10	10	10	10
96/4	10	10	10	10	10	10
97/4	10	10	10	10	10	10
98/4	10	10	10	10	10	10
99/4	10	10	10	10	10	10
100/4	10	10	10	10	10	10

(continued)
 100/4

*United States Foreign Air Transport Routes
(Continued)

Routes	Airway miles ¹	Ser-vice	Schedule (round trips)	Plane miles scheduled daily average	Present Operator	Origin-ally Com-menced
Seattle-Victoria	74	MPE	Variable	66	Seattle-Victoria Air Mail	10/15/20
Seattle-Vancouver	119	PE	Daily	238	United Air Lines, Inc.	7/28/32
Los Angeles-Mexico City via Nogales	1,682	PE	Daily	3,364	Varney-Speed Lines, Inc. (Lineas Aereas Occidentales).	
Total	22,790			17,954		

¹Airway miles here given are the air line distances between cities.
Plane miles schedules to be flown, averaged on a daily basis.

M-Mail P-Passengers E-Express

*United States Department of Commerce-Air Commerce Bulletin Volume 6, No. 4, Page 104.

Bibliography

United States Government Sources

Department of Commerce, Bureau of Air Commerce:

Air Commerce Bulletins

Volume 3, Number 17, United States Government Printing Office, March 1, 1932.

Volume 3, Number 21, United States Government Printing Office, May 2, 1932 - Page 535.

Volume 4, Number 19, United States Government Printing Office, April 1, 1933 - Pages 475 and 476.

Volume 5, Number 10, United States Government Printing Office, April 15, 1934.

Volume 6, Number 1, United States Government Printing Office, July 15, 1934 - Pages 9 and 10.

Volume 6, Number 3, United States Government Printing Office, September 15, 1934 - Pages 51 to 53.

Volume 6, Number 4, United States Government Printing Office, October 15, 1934 - Pages 92 and 104.

Air Navigation Maps, Aeronautics Bulletin Number 10, United States Government Printing Office, April 1, 1932.

General Airway Information, Airway Bulletin Number 1, United States Government Printing Office, September 1, 1932 - Pages 6, 67 and 135.

Descriptions of Airports and Landing Fields in the United States, Airway Bulletin Number 2, United States Government Printing Office, June 1, 1933.

Air Commerce Regulations, Aeronautics Bulletin Number 7, United States Government Printing Office, Jan. 1, 1934.

Record of Accomplishments of the Aeronautics Branch for the Year 1934, Page 5.

Civil Aeronautics in the United States, Aeronautics Bulletin Number 1, United States Government Printing Office, April 1, 1934-pages 2,4,5,12,14,15,26,34 to 46,48.

Aeronautics Bulletin Number 7C., Pages 1,2,3.

United States Post Office Department-Schedule of Foreign Air Mail Routes-Effective October 22, 1934.

Bibliography

United States Government, 1953

Department of Commerce, Bureau of Air Commerce:

Air Commerce Bulletin

Volume 5, Number 17, United States Government Printing Office, March 1, 1952.

Volume 5, Number 21, United States Government Printing Office, May 2, 1952 - Page 555.

Volume 4, Number 19, United States Government Printing Office, April 1, 1951 - Pages 475 and 476.

Volume 5, Number 10, United States Government Printing Office, April 15, 1951.

Volume 5, Number 1, United States Government Printing Office, July 15, 1951 - Pages 1 and 10.

Volume 5, Number 3, United States Government Printing Office, September 15, 1951 - Pages 31 to 33.

Volume 5, Number 4, United States Government Printing Office, October 15, 1951 - Pages 82 and 104.

Air Navigation Maps, Aeronautical Bulletin Number 10, United States Government Printing Office, April 1, 1952.

General Airway Information, Airway Bulletin Number 1, United States Government Printing Office, September 1, 1952 - Pages 2, 3, and 135.

Description of Airports and Landing Fields in the United States, Airway Bulletin Number 2, United States Government Printing Office, June 1, 1952.

Air Commerce Regulations, Aeronautical Bulletin Number 7, United States Government Printing Office, Jan. 1, 1952.

Record of aeronautical accidents of the Aeronautical Branch for the Year 1951, Page 2.

Civil Aeronautics in the United States, Aeronautical Bulletin Number 1, United States Government Printing Office, April 1, 1952 - Pages 2, 4, 5, 12, 14, 15, 24 to 28, 32.

Aeronautical Bulletin Number 70, Pages 1, 2, 3.

United States Post Office Department-Bureau of Aeronautics, Mail Route-Effective October 22, 1951.

Books

- Bennett, R.R.-"Aviation, Commercial Aspects", Ronald Press, 1929.
- Black, A. - "Transport Aviation", Simmons-Boardman, New York, 1929, 2nd Edition, Pages 6, 12, 39 and 40.
- Burney, Dennis-"The World, The Air, and the Future", Alfred A. Knopf, London-Publisher.
- Code of Laws of the United States of America in Force December 6, 1926-Page 2119.
- Curtis Publishing Company, Advertising Department, "The Aviation Industry", The Curtis Publishing Company, Philadelphia, 1930.
- Dodd, Paul A.-"Financial Policies in the Aviation Industry", University of Pennsylvania, Philadelphia.
- Duke, Donald - "Airports and Airways", Ronald Press.
- Dunn, Captain Ray A.-"Aviation and Life Insurance", The Daniel Guggenheim Fund for the Promotion of Aeronautics, Inc., New York.
- Hanks, Stedman S.-"International Airports", Ronald Press.
- Kennedy, Thomas Hart-"Introduction to the Economics of Air Transportation", MacMillan Company, 1924.
- Nayler, J.L. and E. Ower-"Aviation of Today", Frederick Warne and Company, Ltd., London and New York, 1930.
- Reeves, Earl-"Aviation's Place in Tomorrow's Business", Forbes 1930, Pages 125,128,130 and 298.
- Rohlfing, Charles C.-"National Regulation of Aeronautics", University of Pennsylvania Press, Philadelphia, Page 7.
- Staples, Z.Carleton and G. Morell York-"Economic Geography", South Western Publishing Company,(Second Edition)Pages 527 and 530.

Pamphlets and Bulletins from Other Sources.

- American Air Lines Pamphlets.
- Pan American Airways System Pamphlets.
- United Air Lines Pamphlets.
- Department of National Defense-Civil Aviation Branch of Canada Bulletins.
- Uncle Sam's Diary-Volume III, Number 4, Page 8.

Bennett, H. W. - "Aviation, Commercial Aspects", Ronald Press, 1933.

Black, A. - "Transport Aviation", Baltimore-Baltimore, New York, 1933.
 2nd Edition, Pages 3, 12, 39 and 40.

Harvey, Daniel - "The World, The Air, and the Future", Alfred A.
 Knopf, New York-Publisher.

Code of Laws of the United States of America in Force December
 3, 1933 - Page 212.

Curtis Publishing Company, Advertising Department,
 "The Aviation Industry", The Curtis Publishing Company,
 Philadelphia, 1930.

Code, Paul V. - "Statistical Tables in the Aviation Industry",
 University of Pennsylvania, Philadelphia.

Dice, Ronald - "Reports and Abstracts", Ronald Press.

Dice, Ronald - "Aviation and its Importance", The Ronald
 Press, New York for the promotion of aeronautics, Inc.,
 New York.

Dice, Ronald - "International Reports", Ronald Press.

Dice, Ronald - "Aviation and its Importance to the Economics of Air
 Transportation", Ronald Press, 1934.

Dice, Ronald and A. G. - "Aviation of Today", Frederick Warner
 and Company, Ltd., London and New York, 1930.

Dice, Ronald - "Aviation's Place in Tomorrow's Business", Ronald
 Press, 1930, Pages 122, 123, 124 and 298.

Dice, Ronald - "Statistical Tables in the Aviation Industry",
 University of Pennsylvania Press, Philadelphia, Page V.

Dice, Ronald and A. G. - "Aviation of Today", Frederick Warner
 and Company, Ltd., London and New York, 1930.
 2nd Edition, Pages 327 and 250.

Department of National Defense - Civil Aviation Branch of Canada

Department of National Defense - Civil Aviation Branch of Canada

Department of National Defense - Civil Aviation Branch of Canada

Department of National Defense - Civil Aviation Branch of Canada

Department of National Defense - Civil Aviation Branch of Canada

Department of National Defense - Civil Aviation Branch of Canada

Magazines

The Saturday Evening Post Articles on Aviation.

Name of Article	Author	Date
Europe Takes to the Air	F.Britten Austin	Aug.29andSept. 5 and 19, 1925
Flying the Frontiers	Arthur Hunt Chute	October 6, 1928
Trunk Liners of the Air	Com.R.D.Weyerbacher	August 18, 1928
Is Air Travel Safe	Donald E. Keyhoe	October 5, 1929
Linking the Americas	James Warner Bellah	April 20, 1929
Air Transport	Charles A. Lindbergh	February 1, 1930

Newspapers

The Boston Globe, October 17 and 20,1934, November 5 and 17,1934
January 19, 1935.

The Boston Transcript, October 29, 1934.

Articles

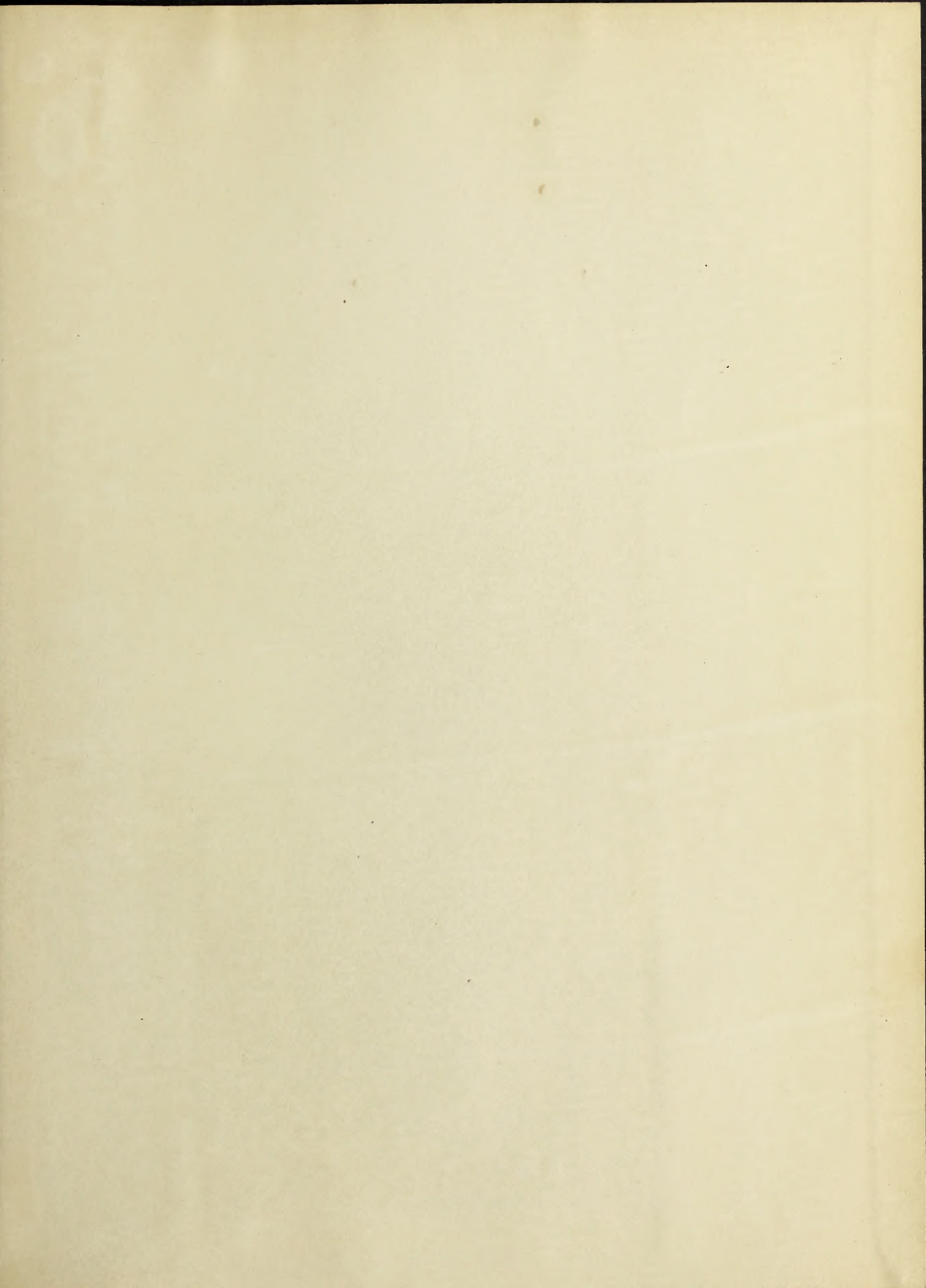
The Saturday Evening Post Article on Aviation.

Date	Author	Name of Article
The Evening Star, Washington, D.C., October 18, 1933	F. B. Smith	Europe Takes to the Air
October 2, 1933	Arthur Hays Sulzberger	Flying the Frontiers
August 18, 1933	Com. R. H. Newcomb	Trunk Lines of the Air
October 5, 1933	Donald R. Keyhoe	Is Air Travel Safe
April 10, 1933	James Warren Bellah	Blanking the Airlines
February 1, 1933	Charles A. Lindbergh	Air Transport

Newspapers

The Boston Globe, October 17 and 20, 1933, November 5 and 17, 1933, January 19, 1934.

The Boston Transcript, October 22, 1933.



ROOM USE ONLY

FEB 25 1963 5-PM
RETD FEB 25 1963
FEB 28 1963 4-PM

629.13

C 88

Cap. 1

BOSTON UNIVERSITY



1 1719 02544 1546

